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BLUE JAY

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ol. XV, No. 1 March, 1957

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Published quarterly by
THE SASKATCHEWAN NATURAL HISTORY SOCIETY
Membership, including Blue Jay, one dollar yearly.

Blue Jay Chatter

WHOOPING CRANES

In 1956 the Whooping Cranes raised two young, but the total wild population dropped to 24. During the year there was much talk of helping the Whooping Cranes increase their numbers. This began at the Canadian Wildlife Conference in Vancouver in June when Johnny Lynch of the United States Fish and Wildlife Service made definite management proposals. All organizations continue to express grave concern for the future of the Whooping Crane, but as yet no agreement on a management program has been reached.

Mr. J. A. Livingston (**Canadian Nature**, Sept.-Oct., 1956) tells us how "with the disappearance of the ponds and water generally from the prairies, it (the Whooping Crane) was forced to either take new food or move on. It 'chose' — or was forced — to move on." Mr. Livingston reasons that the Whooper cannot adapt itself to eating anything but marsh food o to living with man. But we know that the Whooping Crane often stays fo three weeks during both spring and fall migration feeding in the grain fields and sometimes paying little attention to the farmer or his tractor.

We think that almost everything possible is now being done to protec the Cranes along the migration route, and that it would be impractical t try to re-establish marshes (as suitable nesting and wintering habitat) i what are essentially agricultural areas. Even were such changes feasible they would be slow and the cranes are likely to become extinct before an important changes are made. At our Annual Meeting, October 27, 1956, w passed a motion backing any management program proposed by the International Whooping Crane Advisory Group. We are sure that man has th knowledge and ability to raise healthy cranes from fertile eggs more successfully than the cranes can in the wild. We are therefore most anxious t see an active management program begun immediately. This program ca begin with birds now captive, but it should also consider rescuing some o the eggs from which young are not being raised in the wild.

We think the article on Greater Sandhill Cranes by Dayton O. Hyd (page 19) gives some indication of what can be done with the Whoopin Crane. In support of Mr. Hyde's ideas it is interesting to note that Mr. F Bradshaw in the report of the Game Commissioner, Saskatchewan, 192 says, "It is noteworthy that, while the Whooping Crane lays two, and mor rarely, three eggs at a setting, yet within the last five years no repor has reached us of more than one young bird to a pair of adults havin been observed."

LARGER BLUE JAY

With this issue we are beginning an enlarged **Blue Jay** and a mor active program. The executive of the society hopes that the membershi can be increased sufficiently that fees can be kept at one dollar per yea You can help by selling the **Blue Jay** to your friends. The Regina Natur History Society has mentioned the **Blue Jay** at its Sunday shows. Dou Gilroy, author of **Prairie Wildlife**, a nature column in the **Western Produce** has brought in 50 new members. We appreciate, too, the many renewa that have brought at least one new membership in with them.

Miss Joyce Dew, Saskatchewan Museum of Natural History, has bee persuaded to take over the Boys' and Girls' Section. There are going to lots of changes in this section and lots of prizes too, so send in your entri and join the fun. The articles in the Museum Section which we placed ne the front of each issue during 1956 will now be scattered through t magazine so that we can follow an arrangement of birds, plants, etc. this issue we are happy to present two special articles: "Pairing Display a Spring and Summer Aerial Flights of the Mallard," by Alex Dzubin of t Canadian Wildlife Service, and "Soil and Water Conservation in Prai Agriculture" by D. W. Kirk, P.F.R.A., Regina. If our finances permit to continue to print a larger magazine, we shall have further conservati insert

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THE EDITOR

The Blue Jay

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Counting Birds

By ELIZABETH CRUICKSHANK, Regina

Census-taking may be an arduous job when you are counting humans; but a bird census—that is fun.

In winter, birds do not become active until well after sunrise, but we started early on the bird census day hoping to find an owl just retiring. The glorious sunrise not only filled the sky with a rosy glow; it filled our hearts with hope for a successful day.

We had been checking the species within our area to spot their haunts before The Day. Chickadees, Downy and Hairy Woodpeckers, a Blackbird, all had fed lately in our yard. So we checked our home grounds first, but found only a few sparrows dozing in the trees.

With Dr. Ledingham as driver and Len Greenberg and I as passengers our car set out. In such likely spots as the shrubbery-surrounded incinerator, the parklike R.C.M.P. grounds and even in the fields about the airport—we saw nothing! A Flicker had been observed by the Shoyamas near their home on Regina Avenue, so we all scanned that tree-lined road. No Flicker! The grounds at the legislative buildings where we had seen a Northern Shrike, Purple Finch and Red-breasted Nuthatches on Christmas Day were birdless for us on Boxing Day—or so it seemed. The feeding station in the trees apparently had not been patronized yet.

Then Fred Bard joined us. He knew all kinds of likely places to hunt: around the grain elevators (for starlings), the Burns plant, the Power House, the cemetery (where we had flushed Sharptails one day), the bypass, the grounds of St. Chads, the east side of Wascana marsh—nothing but pigeons or sparrows everywhere we went. Then we got to the south side of the sanctuary, scanning the thinly-blanketed ploughed fields for buntings or owls; still no birds willing to be counted. Fortunately the marsh was free from the fog which usually hangs over it where the warm water from the Power House enters the lake. Fred put out grain to feed the birds then gave his perfect goose call, and the birds sailed in. First came the three dozen Canada Geese and the Mute and Whistling Swans who seemed to float in without any effort. Then ducks arrived, more than three hundred making up the raft. The sun glinting on the blue water, the clear crisp air, colorful movement—the experience was breathtaking.

At first glance the ducks seemed to be all Mallards, green heads of the males like shining emerald adornment above copper breasts. Then we recognized a Pintail, and its mate, two Canvas-backs, a dozen Scaup, several Coots, Western and Pied-billed Grebes. Our favorite ducks, the smart wee Ruddies appeared next, followed by a pair of larger divers, the Red-breasted Mergansers. At our feet a muskrat in the warm water played tag with a sunbeam.

The entrancing beauty of the whole scene could have kept us in this spot all day. But December days are short. We had coffee and sandwiches in the car and were off again, excitment keeping us warm. Our hopes were rising now, too, as the list began to shape up.

But we might as well have called it a day then—almost. The wind dropped, it was a perfect day for birding. So, away we went to treed farms, to the city dump, back and forth over quiet roads and busy highways, then to the legislative grounds where in the now fading light we spied the pair of Purple Finches on an ash tree. Another last look at the sanctuary where last year a Snowy Owl sat on the edge of the ice watching all the potential dinners cavorting so near him. No owl! We turned toward home—to get stuck in a snow bank. What a day!

Thrilling - beautiful - strenuous but counting birds can be frustrating, too.

Photo by F. W. Lahrman

WASCANA CANADA GEESE

Transformation

Five Canada geese flew over my head
In stately line with wings outspread,
And the hills twined green before my eyes,
The icy river flowed summerwise,
Forgotten winter's frost and snow,
Springtime entered my heart, aglow,
When five Canada geese flew over my head
In stately line with wings outspread.

—Clarissa Stewart

printed from the Saskatchewan Poetry Book

The Horned Lark's Arrival

By RONALD HOOPER, Somme, Sask.

Just as the mid-July arrival of the Solitary Sandpiper is the fore-
nner of autumn, and the mid-October arrival of the Snow Bunting is a
elude to winter, when the Horned Larks are running over the snow
ifts and singing merrily from the fence posts, we know that spring is
st around the corner. When we have spent all winter without hearing
e song of a bird, the simply sung ditty of the Horned Lark makes an
cellent substitute for the clear notes of an Oriole, or the squeaky ejacu-
tions of a Catbird. It is always a pleasure to have our feathered friends
me home for the summer, with the marvellous timing described in the
ords of the Bible: "Yea, the stork in the heaven knoweth her appointed
nes; and the turtle and the crane and the swallow observe the time of
eir coming."

Fifteenth Annual Saskatchewan Christmas Bird Count, 1956

Edited by STUART and MARY HOUSTON

In spite of the mildest Christmas season on record, this year only 17 localities reported, the lowest number since 1950. However, a record of 57 species were observed bettering the totals of 53 species in 1955 and 51 species in 1954.

The Magpie was the commonest species, observed in all 17 localities. Next was the English Sparrow, from 15; Snow Bunting, from 13; Black-capped Chickadee, Ruffed Grouse, Sharp-tailed Grouse, from 12; and Pine Grosbeak and Downy Woodpecker from 11. The Horned Owl and Hungarian Partridge were seen in 10 areas, the Hairy Woodpecker in 9 and the Northern Shrike in 8. Thus it was an unusually good year for both Horned Owls and Northern Shrikes. The Ruffed Grouse was well up on the list. Farther down the "Christmas hit parade" were the Bohemian Waxwing and Common Redpoll, seen at only seven places. The Blue Jay, from six districts, and Canada Jay, from only four, were also less common than usual.

Special credit must go to Steve Mann, whose contagious enthusiasm sparked a party of eight observers at the rural post office of Skull Creek, south of Piapot. Notice should also be given the Saskatoon Natural History Society, who fielded a record 27 observers and combed their area most thoroughly.

The Regina group had only a short list of the expected winter birds, but had a real field day at the open water near the power house at Wascana Marsh. They recorded 14 species of water birds, and added SEVEN NEW SPECIES to the master list of birds seen in all the 15 Saskatchewan Christmas bird counts—which therefore stands at the fabulous total of 85 species; The new species were: Eared Grebe, Western Grebe, Canvasback, Ruddy Duck, Red-breasted Merganser, Herring Gull and Purple Finch.

The small accipiter, seen by Ed Brooman at Carlton, would have added an additional species to the list, if it could have been positively identified. Other unidentified hawks were a falcon at Dilke (Belcher), a small hawk at Hawarden (Kvinge), a falcon at Carlton (Houston) and two hawks at Yorkton (Chillman and Cursons.)

HISTORICAL STUDY:

Bird watchers from Yorkton, Saskatoon and Prince Albert converged on the Carlton area, 50 miles north of Saskatoon, on Dec. 30, in order to compare their findings with those of Sir John Richardson 130 years before.

J. Richardson, M.D., F.R.S., F.L.S., later to become Sir John Richardson, was surgeon, naturalist and second-in-command to the first and second Arctic overland expeditions of Sir John Franklin. He was the first man to study and report on the birds, mammals, insects, fish, flowers and geology of what is now Saskatchewan. He spent the late winter and spring of 1827 at Fort Carlton on the North Saskatchewan River. The specimens he collected, including some new to science, were described in *Fauna Boreali Americana*, published in 1831.

The only species recorded by the 1956 Christmas count that had not been observed on the Saskatchewan at some time by Richardson, were those since introduced from Europe the Hungarian Partridge and English Sparrow. (The fresh pheasant tracks seen by John Shadick indicated a third introduced species was also in the district.)

Nine species seen on the Saskatchewan by Richardson were not located in our one-day search: Spruce Grouse, Willow Ptarmigan, Hawk Owl, Great Gray Owl, Long-eared Owl (Richardson listed it as wintering, but this may have been a mistaken assumption), Richardson's Ow (named after Richardson), Pileate Woodpecker, American Three-toe Woodpecker and the White-winge Crossbill.

This Carlton count was arrange by long-distance telephone only tw days before, but was entered int with great enthusiasm by those contacted. They felt that the enjoymen derived more than compensated fo the distance and inconvenience involved.

	BANGOR	BLADWORTH	CARLTON	DILKE	FORT SAN	GRENFELL	HAWARDEN	NIPAWIN	PRINCE ALBERT	REGINA	SASKATOON	SKULL CREEK	SOMME	SPIRIT LAKE	WALLWORT	WYNYARD	YORKTON
Eared Grebe										1							
Western Grebe										1							
Pied-billed Grebe										1							
Whistling Swan										5							
Canada Goose										35							
Mallard					15					300	8						
Pintail					1					3							
Green-winged Teal										(1)							
Canvasback										2							
Lesser Scaup					2					12							
Ruddy Duck										4							
Reb-breasted Merganser										2							
Goshawk			3					(1)				2	(1)	2			
American Rough-legged Hawk						1											
Sharp-shinned Hawk			1														
Golden Eagle			4	1			1					1					
Pigeon Hawk									(1)	(1)	1						
Spruce Grouse								(2)									
Ruffed Grouse	1		3			(1)		6	1		1	1	1	6	3	(1)	9
Sharp-tailed Grouse	(5)	12	14	12		10		3			23	1	21	(8)	24		63
Hungarian Partridge		8	4		(1)	(10)	(23)	10		7	52		(5)				17
Ringnecked Pheasant											1	1					
Coot										3							
Herring Gull										(1)							
Horned Owl		2	1			(1)				1	1	6	(2)	(2)		1	2
Snowy Owl		(1)	4			(1)	2			(1)	(1)						1
Hawk Owl								(2)									
Short-eared Owl							2										
Yellow-shttd. Flicker												3					
Pileated Woodpecker								(1)									
Hairy Woodpecker	1		3		1	(1)					5		1	4		2	1
Downy Woodpecker	1		4	(1)	2			1		3	2	1		6		2	1
Canada Jay								5	1				1		2		
Blue Jay			1					4	(1)				1	6			4
Magpie	4	1	46	1	1	6	1	4	2	8	82	39	2	1	1	1	25
Raven			1					6	(1)				2				
Crow											2						
Black-capped Chickadee	4		23		17	(2)		5			11	17	1	46	3	7	25
Hudsonian Chickadee					2			3					3				
White-breasted Nuthatch													1	2			
Red-breasted Nuthatch										1							
Robin					(3)							1				(1)	
Bohemian Waxwing			7		(1)			(25)			136	131		5			5
Cedar Waxwing											20	3					
Northern Shrike			1	(1)	(1)			(1)		1	2		(1)				1
European Starling					(20)					7							
English Sparrow	75	1	258	38	75	75	200	(29)		317	2315	46	20	27		25	289
Brewer's Blackbird								(1)									
Evening Grosbeak								(15)						8			
Pine Grosbeak	1		64		(25)	(4)		26	(2)		73		(10)	7	3		2
Purple Finch										2							
Hoary Redpoll													(2)				
Common Redpoll			155					78			26	47	3	2			8
Red Crossbill								(1)									

Christmas Bird Count (Continued)

BANGOR, Dec. 26th. Around the farmyard, and by car 14 miles to Saltcoats. Total, 7 species, 87 individuals, additional 1 species, 5 individuals. **Mrs. A. Thompson.**

BLADWORTH, Dec. 22. 2 to 4:30 p.m.; sunny; temp. 17 to 20°; 8 inches snow, 2½ hours, on foot. Total, 5 species. 24 indiv.; add. 2 species, 701 indiv. (Excellent detailed map submitted—Ed.). **P. Laurence Beckie.**

CARLTON, Dec. 30. 7:30 a.m. to 5 p.m.; mostly sunny; temp. 34 to 38°; wind W, 10 to 20 m.p.h.; 2 to 5 in. snow, 11 observers in 4 parties. Total party hours, 26½ (13 on foot, 13½ by car); total party miles, 115 (22 on foot, 93 by car). Total, 19 species, 642 indiv. A small accipiter, almost certainly a Sharp-shinned, was noted by **Ed Brooman. — Ed. Brooman, Elias Evasiuk, Tony Capusten, Mel Welsh** (Prince Albert Natural History Society); **Jonathan Gerrard, Dr. John Gerrard, J. R. Hogg, J. Frank Roy, John Shadick** (Saskatoon Natural History Society); **Dr. and Mrs. Stuart Houston** (compilers) (Yorkton Natural History Society).

DILKE, Dec. 26. 8 to 12 a.m. and 2 to 4 p.m.; mostly cloudy; temp. 30 to 35°; wind 5 to 20 m.p.h.; 5 inches snow. 4 hours and 3 miles around farm at chores; 2 hours and 2 miles on foot. Total, 4 species, 52 indiv.; add. 3 species, 3 indiv. **J. B., S. R. and Margaret Belcher.**

FORT SAN, Dec. 23. 1:15 to 4:15 p.m.; heavily overcast; temp. 16°; calm; 6 in. snow. 3 observers. 24 miles by car. Total, 9 species, 116 indiv.; add. 7 species, 56 indiv. Three Robins Dec. 26 wintering at a spring on the lakeside eight miles west of Fort San. The Brown-capped Chickadees have been at Dr. Fyfe's feeding station daily since Nov. 20 and constitute a new record for this district. **Dr. J. G. Fyfe, Jack Lowe, E. M. Callin.**

GRENFELL, Dec. 30, 11 a.m. to 1 p.m. Clear; temp 30° to 34°; wind WNW 20 m.p.h.; 12 in. snow. 2 hrs. and 3 miles on foot; 6 miles by car. Total, 3 species, 91 indiv.; add. 8 species, 21 indiv. An American Rough-legged Hawk seen on Jan. 1. **Mr. and Mrs. John Hubbard.**

HAWARDEN, Dec. 22. 1:30 p.m. to 4:30 p.m., temp. 16°; 4 in. snow. 9½ miles by car, 1 mile on foot. Total, 5 species, 206 indiv.; add. 2 species, 223 indiv. **Harold Kvinge.**

NIPAWIN, Dec. 27. 9:30 a.m. to 4:30 p.m. Cloudy, temp. 32°; calm; 12 in. snow. 1 hour and 22 miles by car; 6 hours and 10 miles on foot. Total, 12 species, 151 indiv.; add. 11 species, 118 indiv. Two Hawk Owls seen Dec. 31 and one Brewer's Blackbird on Dec. 26. **Ann, Walter and Billy Matthews.**

PRINCE ALBERT, Dec. 23. 11:45 to 3:15. Temp 10°; wind SE 5 m.p.h. 30 miles by car, 2 miles on foot. Total, 4 species, 64 indiv. Add. (on Dec. 26), 4 species, 5 indiv. **Tony Capusten.**

REGINA, Dec. 26. 147 miles by car; 14 miles on foot. Total, 21 species, 716 indiv. Add: 4 species, 4 indiv. Pigeon Hawk (Richardson's Merlin) noted by **Frank Brazier** (Dec. 25); Herring Gull noted by **Fred Bard, E. L. and R. Fox** (Dec. 30).**Fred G. Bard, F. Brazier, W. K. Cruickshank, E L. Fox** (compiler), **R. Fox, Doug Gilroy, M. Goudie, W. H. Greenberg, Dr. G. F. Ledingham.**

SASKATOON, Dec. 26, 7:30 a.m. to 4:30 p.m. Sunny, overcast by noon; temp. 35° to 36°, wind SW 12 m.p.h. 27 observers in 6 parties. Total party hours, 35½ (18 on foot, 17½ by car); total party miles, 228 (23 on foot, 205 by car). The Pigeon Hawk was checked by 5 observers; the 8 Mallards were on the open water below the power-house. Total, 19 species 2811 indiv. **Dr. R. M. Bremner, Mr and Mrs. Glen Burgess, R. Burgess Dr. and Mrs. J. Gerrard, Jonathan and Peter Gerrard, George and Ross Gerrity, Mr. and Mrs. Vic Harper Mr. and Mrs. B. Hinde, Mary Hinde Jim Hogg, J. Moore, Ralph Morris Bob Pravda, Frank Roy, Dr. an Mrs. L. G. Saunders, John Shadick Dr. E. Wait, R. Wait, H. W. Wickenden, Mrs. M. Younger.** (Saskatoo Natural History Society)

SKULL CREEK, Dec. 30, 8:30 a.m to 1:30 p.m. Light clouds, temp. 26 to 40°, wind 15 m.p.h. Five miles o foot along Skull Creek; six miles b car. Total, 16 species, 328 indiv. **S. A Mann, Helen Mann, Robert Mann Betty Long, George Swain, Bern Swain, Iris Lyons, Harry Williams**

SOMME, Dec. 28, 9 a.m. to 4 p.m. Calm, temp. 35°, cloudy, 15 in. snow. 3 hours and 20 miles by tractor; 4 hours on foot. Total, 13 species, 1064 indiv., add. 6 species, 21 indiv. **Ronald and Donald Hooper.**

SPIRIT LAKE, Dec. 30, 8 to 5:30 p.m. Clear with cloudy intervals; temp. 35°; windy; snow 6 to 20 in. deep. 2 observers separately. 10½ hrs. and 9 miles on foot. Total, 15 species, 133 indiv.; add. 2 species, 10 indiv. **Bill Anaka, Joyce Gunn.**

WALLWORT, Dec. 27. Mild, no wind. Around farm, and 22 miles by car. Total, 7 species, 101 indiv. **J. Turnquist.**

WYNYARD, Dec. 30. Total, 6 species, 38 indiv. Add: 2 species, 2 indiv. Robin was noted on Dec. 27. **D. Bardal**

YORKTON, Dec. 26, 8 a.m. to 5:30 p.m., temp 32° to 36°; 20 in. snow. 14 observers in 6 parties. Total party hours, 19½ (9 by car, 10½ on foot); Total party miles, 62 (51 by car and 11 on foot). Total, 16 species, 542 ind. **Wayne Bjorgan, Brother Clarence, Brother Clement, Henry Chillman, Jr., Ronald Coleman, Tom Cursons, Archie Fraser, Art Gellert, Dr. and Mrs. Stuart Houston,** (compilers), **Phil Pawluck, Bob Pearce, Cliff Shaw and Jeff Smith.** (Yorkton Natural History Society).

MINITONAS, Manitoba, Dec. 22. Around farm. Ruffed Grouse, 4; Blue Jay, 1; Black-capped Chickadee, 4; English Sparrow, 40; White-winged Crossbill, 30. Total, 5 species, 79 indiv. Add: Sharp-tailed Grouse, 1; Magpie, 3; Raven, 3; on additional days. **Fay and Will Ranson.** (This Manitoba count is not included in the Saskatchewan table following).

Bird Notes

YELLOW-SHAFTED FLICKER at SASKATOON — **Mrs. J. Gerrard** reports that none of the usual winter birds have come to their feeding station this winter. However, three times, January 13, 24, 31, they have seen a Yellow-shafted Flicker come and feed on the shrivelled berries of the Highbush Cranberry and the Virginia Creeper.

SLATE-COLOURED JUNCO WINTERING? — Noted by **Dr. L. G. Saunders** at Saskatoon on January 30.

IS THE HOODED MERGANSER RARE IN SOUTHERN SASKATCHEWAN? — This quesition is posed by the following report from **E. M. Callin**, Fort San: "On October 27, 1956 I recorded this bird for only the second time—an apparent indication of its scarcity in the territory which I have been able to cover properly. A well-plumaged male was shot at the head of our group of lakes here and later shown to me. However, a resident at the head of the lakes and who seems to know his game birds very well states that each spring and fall he sees considerable numbers of Hooded Mergansers."

GOLDEN - CROWNED KINGLET AT YORKTON — Re: Anaka's record of the Golden-crowned Kinglet at Spirit Lake on Oct. 31, 1956 (**Blue Jay**, XIV, 119), **Dr. Stuart Houston,** Yorkton, writes: "This is the fourth record for the Yorkton district—all since publication of **The Birds of the Yorkton District** (1949). A Golden-crowned Kinglet was found dead on Tupper Ave., Oct. 9, 1951 by Andrew Burant (**Blue Jay**, IX, Dec., p. 12). I saw two in the Yorkton hospital grounds on Dec. 22, 1953 (**Blue Jay,** XII, Jan., p. 32). On April 24, 1955, on a Y.N.H.S. outing to Hopkin's Lake on the western edge of Yorkton, I located a male in song, and later we observed a female from only four feet away. These were likely in migration.

GOLDEN - CROWNED KINGLET AT FORT QU'APPELLE — On Nov. 2, 1956, a single bird was seen by **E. M. Callin** on the Sanitorium grounds. Mr. Callin was attracted by the very high, shrill and somewhat rough quality of the call notes which were uttered insistently, and which he had never heard before. As far as he can recall, Mr. Callin has seen a Golden-crowned Kinglet only once before in the Fort Qu'Appelle area. He notes however, that the **Chickadee Notes** records two seen on November 5, 1956 (three days later than his own record) by Stanley Harrison of Fort Qu'Appelle. Mr. Harrison found them in his barn where they stayed for about an hour.

BIRD BANDING RECORDS FROM SWIFT CURRENT, 1956—The following species were banded in 1956 by Arthur Ward on his farm at Burnham or at his home in Swift Current: Horned Grebe (1), Least Flycatcher (1), Barn Swallow (5), House Wren (4), Catbird (1), Brown Thrasher (2), Robin (26), Nashville Warbler (1), Yellow Warbler (4), Magnolia Warbler (1), Myrtle Warbler (1), Pine Warbler (1), Connecticut Warbler (6), Bronzed Grackle (1), Purple Grackle (3), Slate-colored Junco (42), Tree Sparrow (60), Chipping Sparrow (1), Clay-colored Sparrow (29), Harris's Sparrow (3), White-crowned Sparrow (5), White-throated Sparrow (1), Lincoln's Sparrow (7), Song Sparrow (29).

EDITOR'S NOTE: It should be noted that the Pine Warbler recorded by Mr. Ward is not included in the Saskatchewan check-list; but that Bent (1953) gives its breeding range as north to central Alberta and central Saskatchewan (Wingard) . . . and west to southern Saskatchewan (Indian Head).

PROBLEM OF HOUSE SPARROWS AT FEEDING STATIONS — O. A. Stevens, Fargo, N.D., wants to add to Mrs. Skinner's observations about sparrows (**Blue Jay**, XIV, 136). "I find," he says, "they eat about everything. One neighbor keeps them well supplied with bread but still they hang around the shelf to filch nuts or sunflower seeds. I have never used crumbled suet but they do pick up the crumbs dropped by other birds, making a belly-landing on the snow when the weather is very cold. My longest tale is of the sparrow that seized a piece of partly loosened suet, hung by his bill and fanned with his wings to pull it loose. Their fondness for raisins is exasperating. The one thing that has them baffled is my special chickadee cage. A one-inch opening in a screen allows the chickadees to pass (some squeezing). At the moment I have about a 10x4x3 tray on the shelf. The nuthatches do not approve but I try to leave the tray inside within stretching distance until the sparrows get too persistent."

FOOD FOR BIRDS IN FLOWER GARDENS — Elsie Dobryden of Sanford, Manitoba notes how popular flower seeds are with winter and migrant birds. She finds the Goldfinches like to feed on cosmos, and that Juncos and Sparrows favour petunias. Birds obviously appreciate the untidy gardener who does not remove plants from his garden in the fall.

WATCH FOR COLOUR-MARKED MALLARDS

The Illinois Natural History Survey has requested observers throughout the flyway to be on the lookout for two groups of colour-marked Mallards. Group 1, consisting of 200 drakes, was subjected to artificial lighting for a period of six weeks to advance their breeding condition, Group 2 serves as the controls. Prior to their release in January, the wings of Group 1 were dyed pink and of Group 2, green. Purpose of the experiment is to determine if the internal differences in these two groups of ducks will be reflected by their movements. **Please report any observation of these birds to Frank C. Bellrose, Illinois Natural History Survey Laboratory, Havana, Illinois.**

INFORMATION WANTED RE: DISTRIBUTION OF SASKATCHEWAN THRUSHES

In Eastern Canada, as one goes north, or gains altitude, one encounters the thrushes in this order: Hermit Thrush, Olive-backed Thrush, and finally, Grey-cheeked Thrush. A similar situation is shown for Western Canada in a thrush distribution map in the September 1956 issue of "The Wilson Bulletin." The map, even in a general way, is only accurate for the Veery. In my experience, the ranges of the Hermit Thrush and Olive-backed Thrush in this province nearly coincide. Indeed, in Cypress Hills, the Olive-backed occurs without the Hermit. Similarly at Somme, the Hoopers record the Olive-backed as an occasional resident, the Hermit only as a migrant. Carlton is the only locality where I have found Hermit Thrushes without the Olive-backed. Both species occur at Flotten Lake, Prince Albert National Park Nipawin and Madge Lake.

If there is an area where, even with suitable habitat for both, only the Hermit Thrush occurs, it must be a narrow strip indeed. Obser vations of singing males and of nests are requested from all members familiar with the two species—keep this in mind when birding in the southern fringe of the Canadian zone. (The songs of these species are the best aid to identifying them, and may be learned from bird song records.) Send any such information to: **Dr. Stuart Houston, Box 278, Yorkton, Sask.**

Starling Records

By DR. STUART HOUSTON
Yorkton, Sask.

Timothy Myres, of the University of British Columbia, is doing a research study of the European Starling, and at his request I have checked all my records of this species. It seems that the Starling is still not common in the Yorkton district. As noted in my "Birds of the Yorkton District" (1949), they were first recorded at Bredenbury in May 1938; at Crescent Lake, west of Saltcoats, in Feb. 1941; and at Willowbrook in the winter of 1941-42. The first individual I saw here was one bird in a flock of blackbirds at Rousay Lake on Sept. 1, 1944. On March 13, 1945, J. R. Foreman noted a flock of twenty Starlings four miles east of Yorkton. Arnold McPherson observed Starlings on the south side of Yorkton on May 14, 1945. L. H. Walkinshaw saw two near Yorkton on May 25, 1947. Since returning to Yorkton in 1951, I have only one summer record of Starlings - six noted near Rokeby on April 2, 1955. The Yorkton Natural History Society outings —nine in 1952, ten in 1953 and ten in 1954—all failed to record Starlings.

The Yorkton area is combed more thoroughly by bird watchers during the Christmas bird count than at any other time of year. Five Starlings were noted on Dec. 26, 1945; two on Dec. 24 and 30, 1946; four on Dec. 26, 1948; twenty-five on Dec. 26, 1953; four on Dec. 26, 1954; and six on Dec. 26, 1955. None were noted durng nine other Yorkton Christmas counts.

I have seen Starlings more frequently and more consistently in the Saskatoon area than anywhere else in the province. On June 12, 1954, found four young Starlings in a telephone pole five miles north of Aberdeen, Sask. I banded two of the young, my only banding of this species. Seven Starlings were observed near a Saskatoon packing plant on March 24, 1956 and six near Dundurn on March 31.

My first four trips from Saskatoon to the Carlton area on Feb. 5, March 10, March 11 and March 17, 1956, failed to reveal Starlings. Subsequently they were noted on every visit to the Waldheim - Petrofka - Laird - Carlton-Rosthern-Duck Lake area as follows: two on March 18, seven on March 25, a flock of thirty-five on April 1, three on April 14, flocks of 25 and 15 on April 15, two on April 28, ten on April 29, six large flocks on May 6, ten on May 12, five on May 27, one on June 17, twenty-four on June 23, five on June 30 and eighteen on July 2. However, none were noted during the co-operative Christmas Bird Count at Carlton on December 30, 1956. They would thus seem to move elsewhere during the winter months. Possibly some have learned to wander southward each winter.

Of all of my trips around Saskatchewan in the past four years, the only other Starling record is for four at Daylesford on June 14, 1955. Fairly intensive studies at Hudson Bay and Greenwater Lake, June 1953 showed no Starlings. The Saskatchewan Natural History Society summer meetings, which recorded 82 species at Fort Qu'Appelle June 18-19, 1955 and 93 species at Madge Lake, on June 9-10, 1956, both failed to disclose Starlings.

INFORMATION WANTED

When was the Starling first seen in your district?

How common is it now?

Have you breeding records?

Is it present all winter?

Have you "spring migration dates" for the first appearance of the Starling in spring (if it does not winter)?

Send this information to the Editor. He will edit it for a future BLUE JAY, and forward the information to M. T. Myres of the University of British Columbia who is making a special study of the Starlings in Western Canada.

Pairing Display and Spring and Summer Flights of the Mallard

By ALEX DZUBIN,
Canadian Wildlife Service, Saskatoon, Sask.

Mallards are found in Saskatchewan during the larger part of the year. Their presence may first be noted late in March as they move in large flocks onto the grassland and parkland breeding grounds. Later in the season feeding groups of young and adults remain until continued freezing weather forces them out in November or December. This article is an attempt to describe the courtship postures and aerial flights which are so often seen during the relatively short breeding season.

Each year, starting in October and continuing through March of the following year, groups of Mallard drakes court females prior to pairing. Although much of this pairing occurs on the southern wintering areas of the United States, courting groups do occur in our province early in the fall, and again during spring migration. Such groups can be easily identified if one watches their general behaviour on the water. Courting groups are usually made up of from four to fifteen drakes and one to five hens. Usually, however, five or six drakes court one female.

Characteristically the following postures can be identified in the courting drakes (adapted after Lorenz, 1941). These are given in the order in which they usually occur as a group of drakes swim about an unmated hen.

1. **Mock preening** — A drake runs his bill quickly against the underside of his slightly lifted wing so that a loud "Rrr" sound can be heard.

2. **Preliminary shaking** — Each drake swims about nervously with his head and neck tucked into his body; no white neck ring can be seen. The head feathers are ruffled and the drake may then thrust his head upward and shake his entire body while partly lifting it out of the water. This shaking occurs regularly and with increased intensity. Following this one of the following three postures occur.

3. **Grunt Whistle** — The drake's bill is thrust down into the water and then he moves his body while his head is still low, appearing to draw his bill upward along his breast. When the neck is strongly curved there is a loud sharp whistle followed by a deep grunt, the head straightens up again, and the body sinks back.

4. **Head-up Tail-up** — With a loud whistle the drake thrusts his head with indrawn chin backwards and upwards, and at the same time curves his rump upwards, so that the whole bird looks short and high. This posture is very brief. The head remains high and the bill is pointed toward a female in the group. Following this the drake swims swiftly over the surface of the water with head and neck held close to the surface. He then lifts his head and turns the back of it toward the female. The hen may follow a certain drake for a short distance away from the group.

5. **Down-up Movement** — A drake quickly thrusts his bill into the water and in the next movement jerks up his head without lifting his breast, which is still low in the water. When the head is highest a whistle is emitted and a small stream of water may follow the bill up. Following this, the drake gives a short harsh call, a nasal "raehb."

Hens invariably initiate a courting group by their actions. They swim nervously about with head and neck low over the water, occasionally giving short quacks. Hens continue this neck stretch and quacking through the previously described courting display of the males. In fact, should the hen suddenly stop these movements, the drakes als stop and do not complete all of th display postures. Hens may als swim after a drake for a short distance, moving their head and bi quickly backwards toward the sides, giving the "inciting call" be described as "queggege - ggegge ggeggegg." This usually occurs afte the head-up tail-up posture of th drake. Drakes occasionally figh while courting, one grasping the other's chest feathers and tugging. The whole courting group may also rise in the air, fly about for a minute and resettle a short distance away.

The entire sequence of the drake's postures may be given, at the height of courtship intensity, in a period of ess than two minutes. However, postures are given over and over again. Courting groups break up after five or ten minutes of display but may regroup again at the end of a short rest period. After a number of such pairing displays a hen may end to associate with a particular drake. This is the first indication of he formation of the pair bond, which probably strengthens through continued association. The pair remains together as a unit and later migrates north.

Prior to copulation a pair of Malards will face each other and both pump their heads and necks up and down some ten times. Then the female stretches her neck and head ow into the water and the male mounts. After the coition the drake flings back his head, gives a loud whistle and swims about the female n a half circle, with his head held ow on the water.

During the spring and summer mall flocks of Mallards are seen flying in the air in apparent migraion, display or pursuit. If these flocks are watched closely one can ee that their flying direction may not be consistent, that the number of males and females vary and that ome flocks fly slowly while others move over the countryside in a very erratic manner. The following discussion attempts to classify and nterpret some of these aerial flights.

Migrating Flight

With the coming of the first few pring days Mallards migrate north n flocks varying in size from a ew pairs to several hundred birds. However, small groups of from ight to forty birds are characterisically seen. These migrating flocks ly in a northerly direction at varyng distances above the ground, ome as close as 200 feet and others well above 5,000 feet. They fly at night during the early morning and evening hours and less commonly hrough the day.

Most of the groups are made up of pairs, although small groups of unmated males may accompany the pairs. In any flock each female is invariably followed by a male. Individual pairs can easily be picked out for the drake and hen remain very close to each other in flight and on the ground. Occasionally Pintails and Baldpate mix with these flocks moving north.

After the flocks reach the breeding grounds individual pairs gradually drift away from the main body of birds. Each pair settles and remains on a small water area or portion of a marsh prior to nesting.

Spring Courtship Flight

Within resting migrating flocks, a few of the hens seem to be only loosely paired with their drakes and these females may initiate a so-called courting flight. A number of bachelor drakes crowd about the hen giving courting postures No. 2 and 3 (i.e. preliminary shaking and grunt whistle.) Often their persistent crowding forces the female to rise and the drakes follow. Some five to fifteen drakes may join in the chase after the single female. The group flies back and forth and up and down over the countryside in a very erratic manner for a period varying from five to ten minutes. Females occasionally give the "inciting call" during the chase. After a few minutes some of the drakes may break away, and later the remainder of the group settles in another pond. It has not yet been determined whether the female chooses another mate during these flights or whether she is merely trying to elude the persistent bachelors. These flights are usually seen from the first part of April to the middle of May.

Continuous Call

During quiet warm mornings and evenings in early April mated females start to give a single loud monotone call best described as "qua-qua-qua-qua" etc. About 16 to 20 calls are given per ten second period but length of the calling period is usually not very consistent. Apparently this is an indication of some inner restlessness in the bird and perhaps of a desire to begin laying eggs. While calling the female appears nervous, flying about the countryside from one water area to another or merely swimming or fly-

Photo by F. W. Lahrma

MALLARD TERRITORIAL PURSUIT

ing about a single slough. She may even visit nesting cover with her drake. Females give this call at sunrise and sunset but are sometimes heard through the day as well. The continuous call is usually heard after April 10th and a few females give it until the middle of May. Hens call most persistently during a short period prior to egg laying.

Territorial Pursuit

Until the time that mated females give the continuous calls pairs are relatively gregarious, that is, they still associate with each other without too much apparent friction. However, as soon as the female starts to call, the drake becomes aggressive and chases all pairs and females which attempt to land near him or his female. His attack is usually directed toward the intruding female of a pair and only rarely toward the male. In this way he keeps a small area of marsh or slough cleared of other Mallard pairs. Pairs of other species are rarely attacked. This protected area, known as a territory, is the area from which the female flies to her nest and upon which the drake awaits his female. The nest itself is not necessarily within the territory, but may be up to one-half mile away. (The whole problem of Mallard territories is unduly complex because of some overlap o these protected areas. For a mor complete but not necessarily corre discussion see Dzubin, 1955).

Drakes chase females of intrudin pairs for distances up to 200 yar during the pre-nesting period a well over a half mile during t early incubation period. A typic flying territorial pursuit contai three birds. The territorial dra chases the female of the transgres ing pair and both these birds tw and turn over the countryside. T drake of the female being chas follows some fifty feet behind the two birds. The female may give t inciting call of courtship or occ sionally a "repulsion call" which w be described later. After the ch the territorial drake returns to s territory, the drake of the tra gressing pair rejoins his female a they alight elsewhere. Occasiona two or three drakes may sim taneously launch territorial purs against the same female of a p especially if their territories are cl to each other. Territorial purs are commonly seen from April 1 to the middle of July, most of th occurring in late April and ea May.

As previously mentioned, females art to settle in nesting cover after arting the continuous call. After siting nest cover for five or six ays a nest site is chosen and the male starts to lay her eggs. Each orning, sometime between 5:00 to 00 a.m., the pair leaves the tertory and flies low over the nest te, and the female drops into the ver near the nest site while the ake returns to the territory or me other nearby water area. The male usually completes laying by on and thereafter the pair feed d rest. Each morning another egg laid until eight to thirteen eggs mplete the clutch.

During the egg-laying period the ake is always with the female hen she is off the nest. When the male starts to incubate after the st egg is laid, her drake joins other akes whose females are also inubating, and they form small groups ho feed and rest most of the day. ach morning and evening the drake sits his territory and awaits the male. If she returns he remains ert while she feeds. Toward the d of the second week of incubation e drake's attachment to the female anes and he spends more and more me with other males. Later these oups retire to lakes where the akes moult. Practically no Mallard ake actually sees his own brood.

roup Chases

After the drakes gather into small oups during the early incubation riod they regularly chase any inubating female flying off her nest, tempting to force her down and pe her. An incubating female set on by a group of drakes gives a ry harsh "repulsion call," a broken ries of single "gaeck" sounds, arply uttered like a cough (Lorz, 1941). With this call the head d back feathers rise, the upper bill bent upward, and the head is awn deeply onto the neck. The female may drop down onto the ground and make short hopping flights over the countryside, always pursued by the group of drakes. All such flights do not necessarily culminate in the successful rape of the duck by the drakes. Many drakes leave the group after a short chase, while others join in. Occasionally female dives into heavy bush to escape her pursuers.

From three to twenty drakes may harry a single female. These flights are most commonly seen during May and June, and less commonly in July when the groups of drakes begin to leave the breeding grounds to moult.

Summer Courtship Flight

A chase which occurs during May and June and is similar to the one described above may be a courtship flight. From three to thirty males may follow a female slowly over the countryside. The female does not give the repulsion call but remains silent and occasionally hovers for a time low over the ground. It is thought that females who lose their clutches late in incubation and whose drakes have already left for the moulting lakes lead such flights. In order to re-nest these females may initiate courting parties to choose another mate. Females who lose their clutches to predators early in incubation are still associated with their drake and need not initiate a courtship flight. However, these hypotheses must be subject to further corroboration.

There is a definite chronological overlap of most of the aerial flights described. Two or more may occur over the same breeding habitat on the same day. This is due to the fact that not all pairs nest at the same time. However, each flight can be keyed if one watches the behaviour of the female and the accompanying drakes.

I would like to acknowledge with thanks the financial aid received from the National Research uncil of Canada and the Wildlife Management Institute of Washington for a study on Mallard ology in Manitoba from 1952 to 1955. The Canadian Wildlife Service has financed all my rk in Saskatchewan. I would also like to thank my colleague, Mr. J. B. Gollop, for his help criticizing the original manuscript.

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ORENZ, K., 1941 — Comparative studies on the behaviour of Anatinae. (Translated by Dr. C. H. D. Clarke) *Avicultural Magazine*, special reprint, 1952, 87 pp.

DITOR'S NOTE: The most recent *Wilson Bulletin*, Dec. 1956, has a page of sketches of "The allard Duck Courtship Display" by E. Carey Kenny and an interesting article on "Seasonal tterns in the epigamic displays of some surface-feeding ducks" by A. Ogden Ramsay that pplement Mr. Dzubin's valuable observations.

Aggressive Behavior of a Whooping Crane

By F. W. LAHRMAN, Saskatchewan Museum of Natural History, Regina

Our knowledge of the behavior of the Whooping Crane (*Grus americana*) is so limited that practically any observation is a real contribution. The following description of aggressive behavior of a wild Crane toward a human being is probably unique.

In line with a continuing museum program of attempting to record photographically the occurrence of Whooping Cranes in Saskatchewan (see **Blue Jay**, 14: 39-42, 76-78, 81, 111-112) I travelled with Mr. Richard W. Fyfe on October 30, 1956 to investigate a report of three Whooping Cranes near Osage, Saskatchewan.

Three birds, a pair with one young, according to the local farmers, had been in this area for approximately two weeks. During this time they kept within an area of about four or five square miles and frequently fed on one particular wheat-stubble field.

When Fyfe and I arrived at this field by car at 12:30 p.m. the Cranes were present but they were far from any cover from which an observer might gain a vantage point. Though we were watching them from a parked car at more than 500 yards distance, the birds soon became uneasy and walked rapidly away from us. They finally flew to another field about one mile away.

I decided to lie in wait for them in a thick stand of weeds at the edge of the same stubble field on the chance that if they should return they might be within the range of the telephoto lens.

At about 1:30 p.m. the Cranes returned, alighting about 300 yards away from me. They at once began feeding in the usual manner with the youngster nearly always between the parents, each of which took turns feeding and standing on the alert. Occasionally all three would have their heads down for brief periods, and taking advantage of this I was able to rise slowly above the weeds to get a clear picture of them. But the watchful Cranes soon saw me and instantly tensed and stoo on the alert. I thought they wer about to fly. Then the bird which judged by the greater size to be th male deliberately began walkin rapidly **towards** me, followed by th other two, his neck craning this wa and that as though curious to se what I might do. He continued thi behaviour until they had cover half the distance between us. The the male suddenly held his nec stiffly erect with the bill point downwards at a sharp angle (se photo), a posture which I had neve before seen in a Whooping Crane i many hours of observation. Th peculiar "strained" posture was hel while the bird was fully erect an

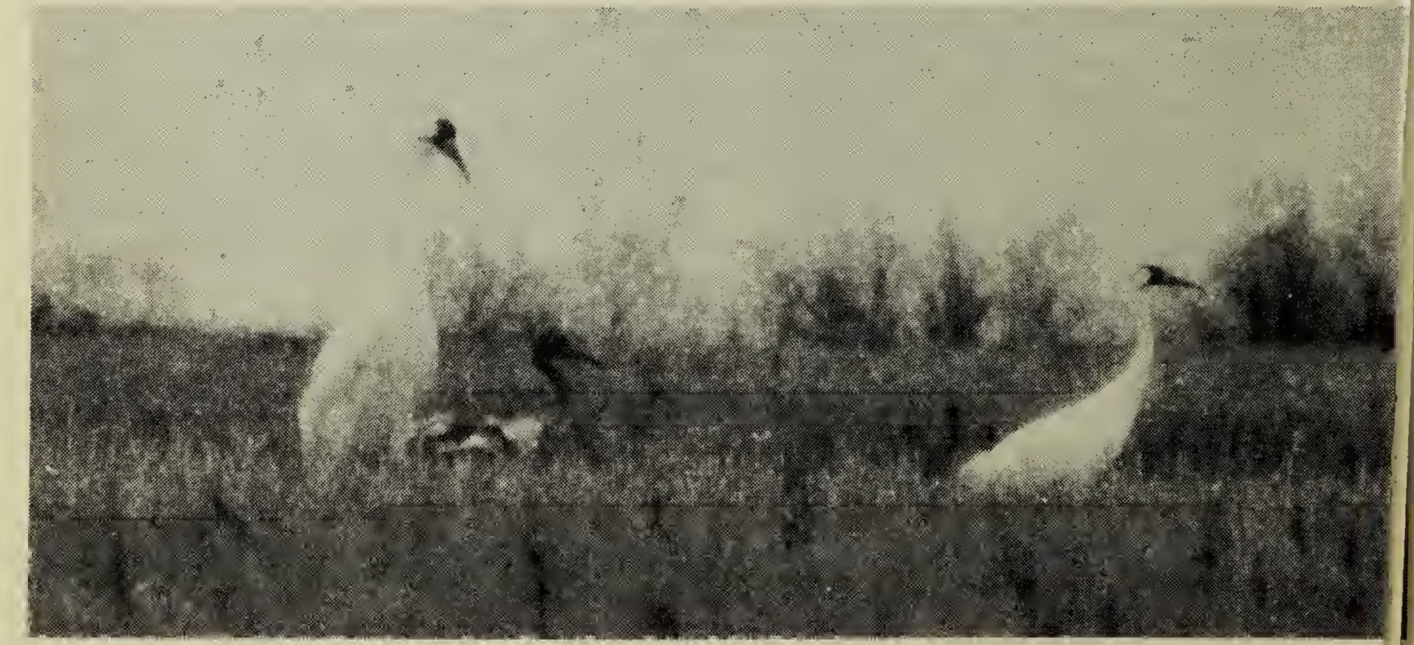


Photo by F. W. Lahr

Cranes at 100 yards, just beginning to walk off to one side. Male, on left, with neck crook walking. This was not all — much to my astonishment the male then suddenly thrust out his neck and actually pecked at the ground. He then brought his neck back to a normal position and resumed the typical head bobbing of a walking Crane. The bird's attitude while crooking his neck and pecking the ground appeared decidedly aggressive. As the male, still followed by the family, walked 50 yards closer to me he crooked his neck and pecked the ground more than a dozen times. (Exact figures were not obtained owing to the difficulty of alternately observing the Cranes and operating two cameras.) When he had approached to within about 100 yards from me he began walking slowly and suddenly gave several very loud and high-pitched calls, starting out like the rattling call of the Sandhill Crane (*Grus canadensis*) and rising in pitch to the end. He was answered immediately in kind by his mate which stood with the young about 15 yards away. During the next five minutes they called several times and twice I heard a faint whistled trill given by the young. In between calls the male continued to crook his neck and peck at the ground. Finally, though continuing to call, they turned abruptly, and walked quite leisurely away from me at a right angle for about 50 yards and then took wing and flew silently away to another field about a mile away.

I left the scene feeling extremely fortunate. Not only had I witnessed a remarkable performance and heard their rare calls but this had also been my first opportunity to photograph a family of Whooping Cranes with a young of the year. These are the first photos ever taken of young of the year during migration. Actually, these pictures were obtained only because the Cranes approached me as described.

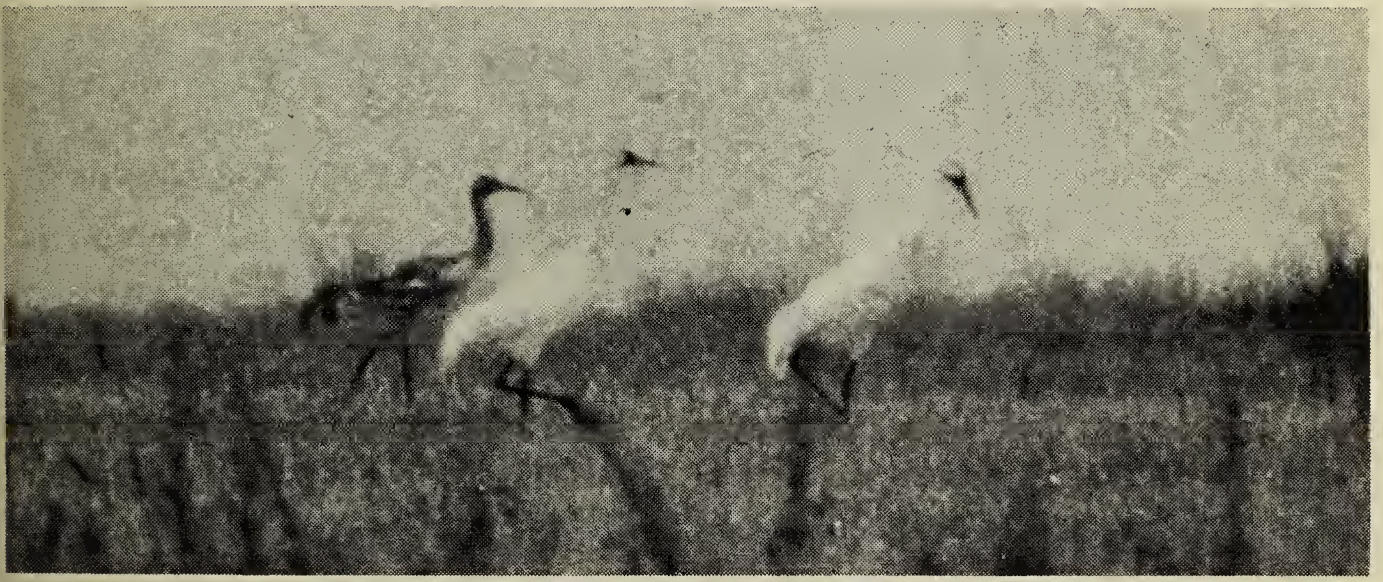


Photo by F. W. Lahrman

Male in lead with neck crooked and about to peck ground.

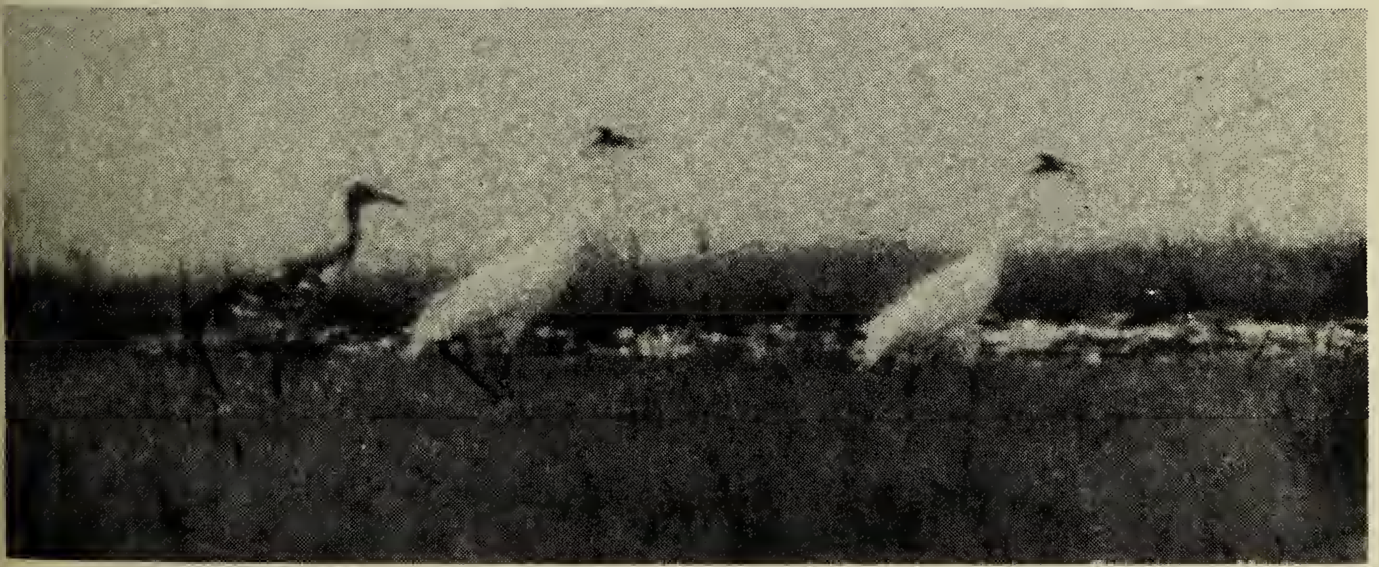


Photo by F. W. Lahrman

Both adult Cranes calling while leisurely walking away.

Whooping Cranes Photographed in the Aransas Refuge

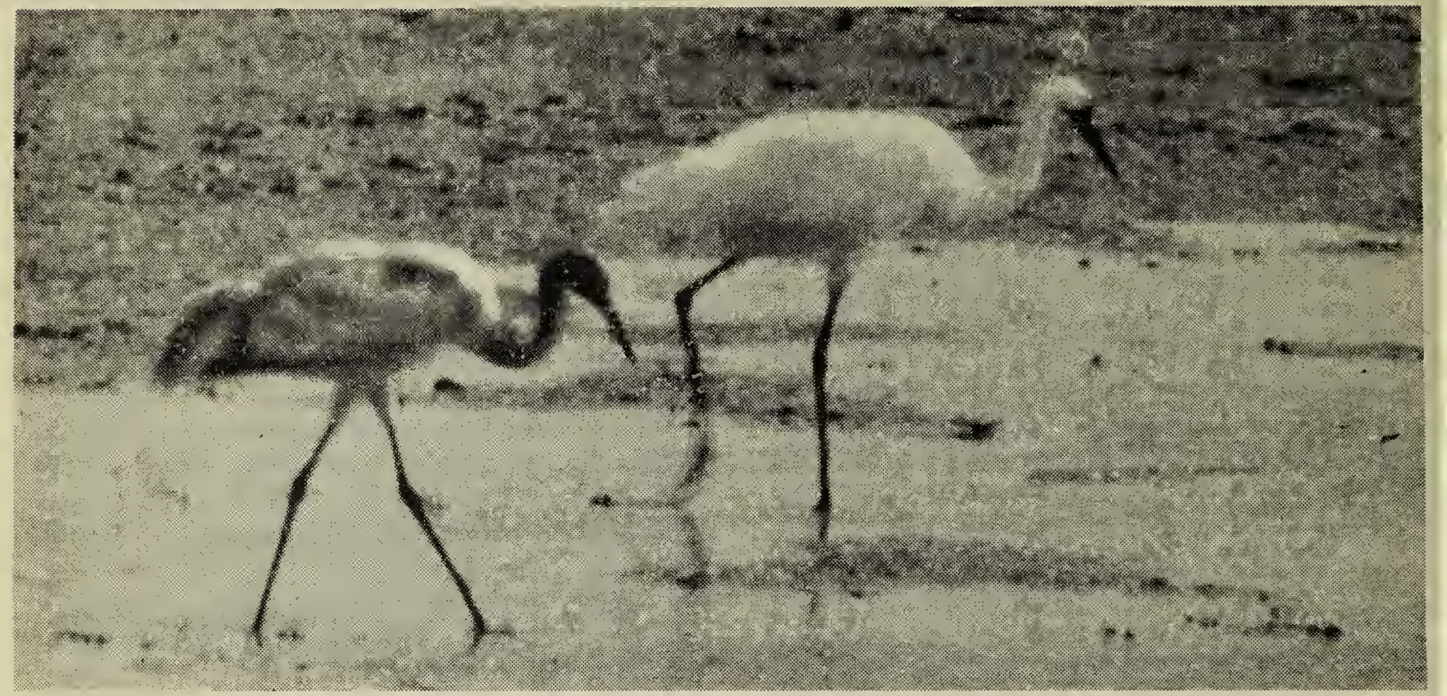


Photo by Horace Tucker

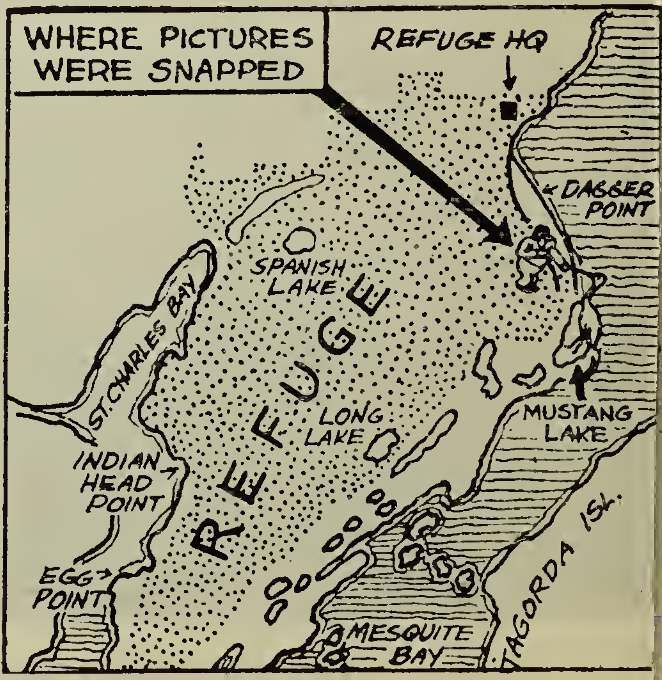
THE KIND OF PHOTOGRAPH YOU GET ONCE-IN-A-LIFETIME
Female Whooping Crane and young feeding in the Aransas National Wildlife Refuge

A Great Picture! One of the Rarest You have Ever Seen! With this caption, the above picture of a female Whooping Crane and its young appeared in the **Houston Press,** December 7, 1956. Through the great kindness of the Press and the Press staff photographer Horace Tucker, we are able to print this rare photograph and the two on the following page to accompany the pictures of the Whooping Cranes taken by Fred Lahrman here in Saskatchewan when the birds were on their way to the Aransas Refuge.

It took a great deal of time and a great deal of special equipment to make these pictures. The story is told by a Press staff writer, Louis Blackburn — Horace Tucker and a companion cameraman, with the permission of the federal government, set up their camera gear among scrub oak and palmetto on the very edge of the swampy shores of Mustang Lake in the Aransas refuge. They waited patiently for Whooping Cranes to appear. Hour after quiet hour went by. Then . . . Cautiously from the scrubby salt cedar stepped the proud family of three, the father picking his way slowly with long, graceful strides, the mother dipping her feet daintily into the mirrored face of the backwater as she swept gracefully from the shadows into the full light of the mellow sun. Junior followed, tripping lightly through the water on his long, awkward legs and shaking out his brown feathers . . .

Only a few hours before, the Whooping Crane family, three of the last 24 members of their species, had dropped 20,000 feet out of the stratosphere to land at last in their winter home after a perilous journey on the high-flying jet stream from the Arctic Circle to the Gulf.

The tired birds sunned themselves lazily, unaware of the two shadows that moved slowly through the scant



oliage of the swamp. The stalking hadows slowed to a dead stop and overed ominously on a dying south vind. The deathly silence was roken by a shrill cry from the father crane . . . The deed was done. The quarry was in the bag. The camera-shy Whooping Cranes had been trapped at last in the lens of a newspaper photographer.

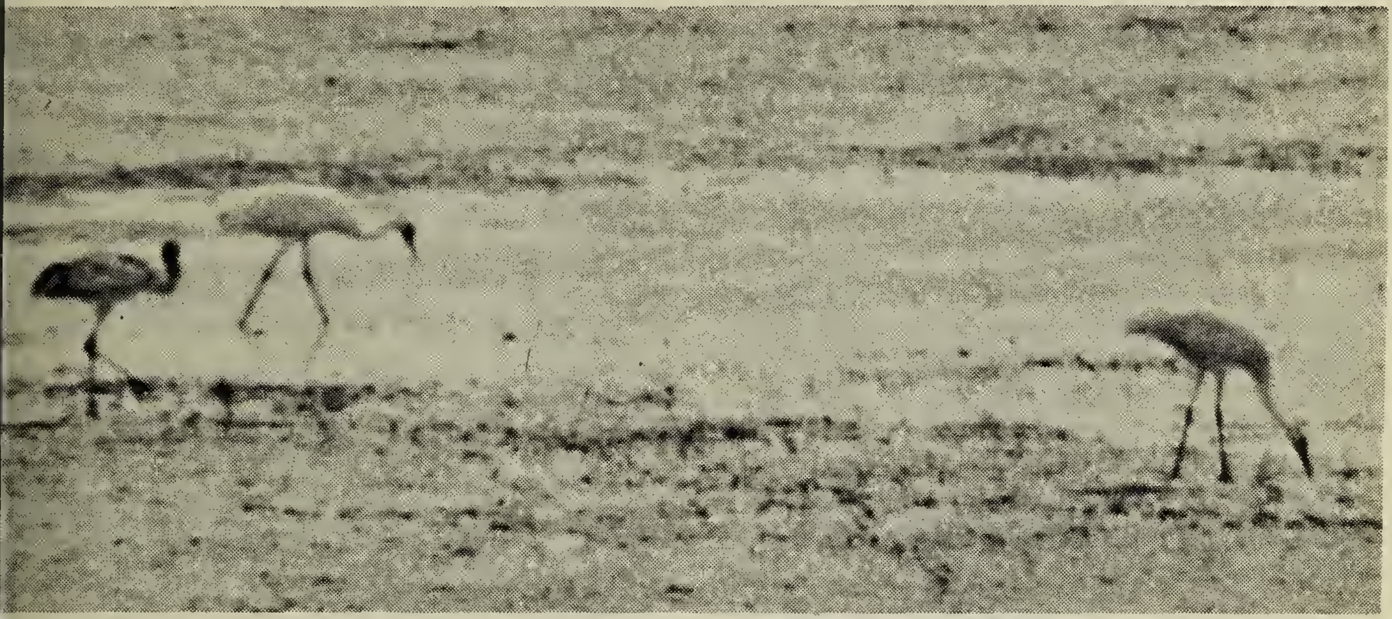


Photo by Horace Tucker

THESE RARE WHOOPERS FLY TO ARANSAS EVERY WINTER FROM CANADA

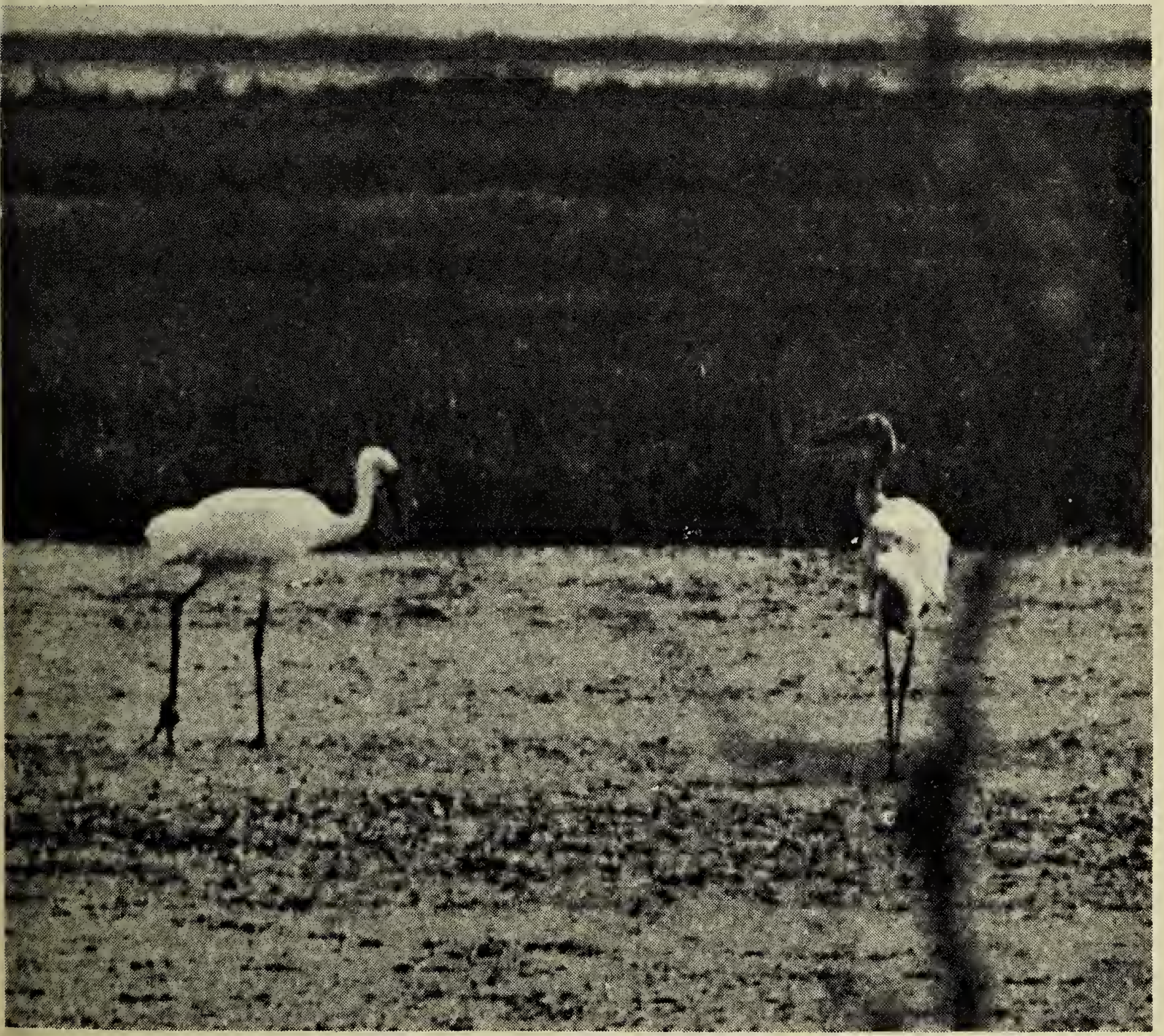


Photo by Horace Tucker

THEY WINTER IN THE DESOLATE SWAMPY ARANSAS

Introduction to Crane Notes

Because the Saskatchewan plains lie along the flyway of the Whooping Crane, readers of the *Blue Jay* are especially interested in these birds and their preservation. Magazine policy has been to give the Whooping Cranes as much publicity as possible. This policy has been followed partly because of the intrinsic interest of any observations of these birds and partly because of our wish to do everything possible to save them from extinction. The problem of saving the Whooping Crane presents a real challenge to all who cherish our wildlife legacy, for the Whooping Crane of North America is apparently the only species of the fourteen full species of cranes described for the world that is now threatened with extinction.

At the annual meeting of the Saskatchewan Natural History Society in October, 1956, a resolution was passed supporting a management programme designed to increase the numbers of the Whooping Crane. This proposal later became the subject of a discussion in the editorial pages of the Regina *Leader-Post* where differing points of view were expressed by the Editor of the *Blue Jay* and John Livingston, of the Audubon Society of Canada. In this exchange of opinions, one important principle was established. No management scheme should be attempted without a thorough investigation of its possibilities and limitations. All available information on the habits of the Cranes should be studied, and the advice of the best aviculturists sought.

The Whooping Crane has actually been the subject of an intensive research programme since 1945 when a special study was inaugurated under the joint auspices of the Audubon Society and the U.S. Fish and Wildlife Service. Results were reported to the public by the Audubon Society in two books by Robert P. Allen: *The Whooping Crane* (1952) and *A Report on the Whooping Crane's Northern Breeding Grounds* (1956).

Research projects involving the Whooping Crane are necessarily limited by the fact that the Crane population is so extremely small. For that reason, people interested in the habits of the Whooping Crane and particularly in the possibility of a management scheme for raising captive cranes, have tried to find parallels among other species of cranes. Terry Jones, who has been breeding the rare Hawaiian Goose or Ne Ne in England and who urges the need for a similar scheme for propogating the Whooping Crane, tells of some European successes in raising captive cranes (Game breeders, Pheasant fanciers and Aviculturists' *Gazette*, Vol. VI,- Jan. 1957). He points out that "every species of crane has laid eggs in captivity in Europe with two exceptions, and both are so rare that only an odd bird or two has ever been kept (Black-necked Crane, Whooping Crane)" and believes that "only the Asiatic White Crane has failed to hatch young in captivity."

In North America, there are only two full species of cranes. Because the Sandhills are so much more numerous, they provide an obvious point of departure for experimental work. Only 24 Whoopers are known to be wintering this year at the Aransas Wildlife Refuge, whereas the Sandhills congregate in thousands in such refuges as the Bitter Lakes National Wildlife Refuge, New Mexico, and the Muleshoe National Wildlife Refuge in Texas. Miss Bess Smith, a flyway observer from Oklahoma, wrote recently to the *Blue Jay* to tell of the thrill it had given her to visit the Muleshoe Refuge in November when "cranes were there by the hundreds and you could stop the car by the side of the road and watch them feeding in the maize fields." A leaflet from the Refuge says that some 30,000 Sandhills win ter there. Lawrence H. Walkinshaw (*Wilson Bulletin*, Dec., 1956) counted 24,038 Sandhill Cranes on one da (March 21, 1954) along the North Platte in Nebraska. What can th Sandhills, which still exist in thes numbers, tell us of the Whoopin Crane? The work of people lik Dayton O. Hyde who have appreciated the possibilities of such an investigation is tremendously an urgently important.

Crane Notes

By DAYTON O. HYDE, Chiloquin, Oregon

I live in one of the last breeding strongholds of the Greater Sandhill Crane. They are the harbingers of my spring. Their croaking voices as they wheel on effortless wing high in the heavens, summon forth the grasses from their winter sleep. They are my companions in the fields in the long, fruitful summers, when the marshes echo with their wary, lonely notes. And they are among the last to forsake me in the fall, when their going brings on the darkened emptiness of a winter world. On a summer's day five years ago, I watched thirty-four Sandhills, dancing in a ring, great grey birds, bowing, croaking, flapping high, in sacred ritual to the Sandhill gods. When ice formed tinkling pie-plates about their long legs, one frosty autumn morning, they migrated. Spring came, but only eight returned.

I watched a lonely female feeding near her favorite nesting slough, waiting for her mate who never came, and I knew then that something concrete must be done to help the cranes. The setting up of a semi-captive breeding flock for research seemed to be an answer. So little was known and yet so much had to be known, for the benefit both of the Greater Sandhills, and of the vanishing Whooping Crane. Even then I became excited. Both species were probably of common origin; perhaps techniques which were found to help the Sandhill would help the Whooping Crane also.

One cannot hurry such projects. One year we rescued a doomed nest, and raised a female; the next year we raised a male. Since cranes do not normally breed until their second year, another year was lost to our project. At last came the eggs, two clutches of two large, mottled-brown eggs. This time we forsook our incubator for bantams.

I have long been bothered by the fact that wild Sandhills lay two eggs, hatch two young, yet never seem to have two young long after hatching. In captivity we found the answer. Sandhills begin incubation on laying their first egg, then lays the second egg. The first chick, usually about three days older, does not tolerate the younger, but turns on him with devastating results which seem as much psychological as physical. Of the two Whooping Crane chicks hatched at New Orleans in 1956 the younger chick disappeared soon after hatching "presumably to a predator." From our experience, I think that this second chick fled in complete terror of his brother. Both Sandhill clutches showed exactly the same pattern of behavior, and we were forced to raise all four chicks separately. From time to time, we tried to reconcile the nestmates, but it worked only until the older bird made a pass at the younger, and then the younger invariably fled headlong, beating itself mercilessly against any obstacle. After such attacks, it sometimes took an hour of patient soothing with choice tidbits to quiet the emotionally disturbed crane. Only when they were grown, were we able to bring them together peacefully.

From our experience with these four young came a greatly simplified hatching and feeding program, a method in which the young cranes are protected at all times by antibiotics as well as from the deadliness of mouldy food. It should be noted here that the surviving Whooping Crane chick at New Orleans died of Aspergillosis, which I have always felt, can best be prevented by food sanitation. Our simplified program could easily be applied to rescue operations in the far North, should need ever arise to rescue Whooping Crane eggs. Should it prove, for instance, that the Whooping Crane raises only one chick from its two eggs, then a method might be worked out whereby the second egg could be gathered in the three-day interim between hatchings, and the wild parents left with their one chick.

We have progressed very favorably in a method of raising cranes by food control rather than caged captivity, by which method we could conceivably raise cranes to any degree of wildness should a captive flock ever be required to step up

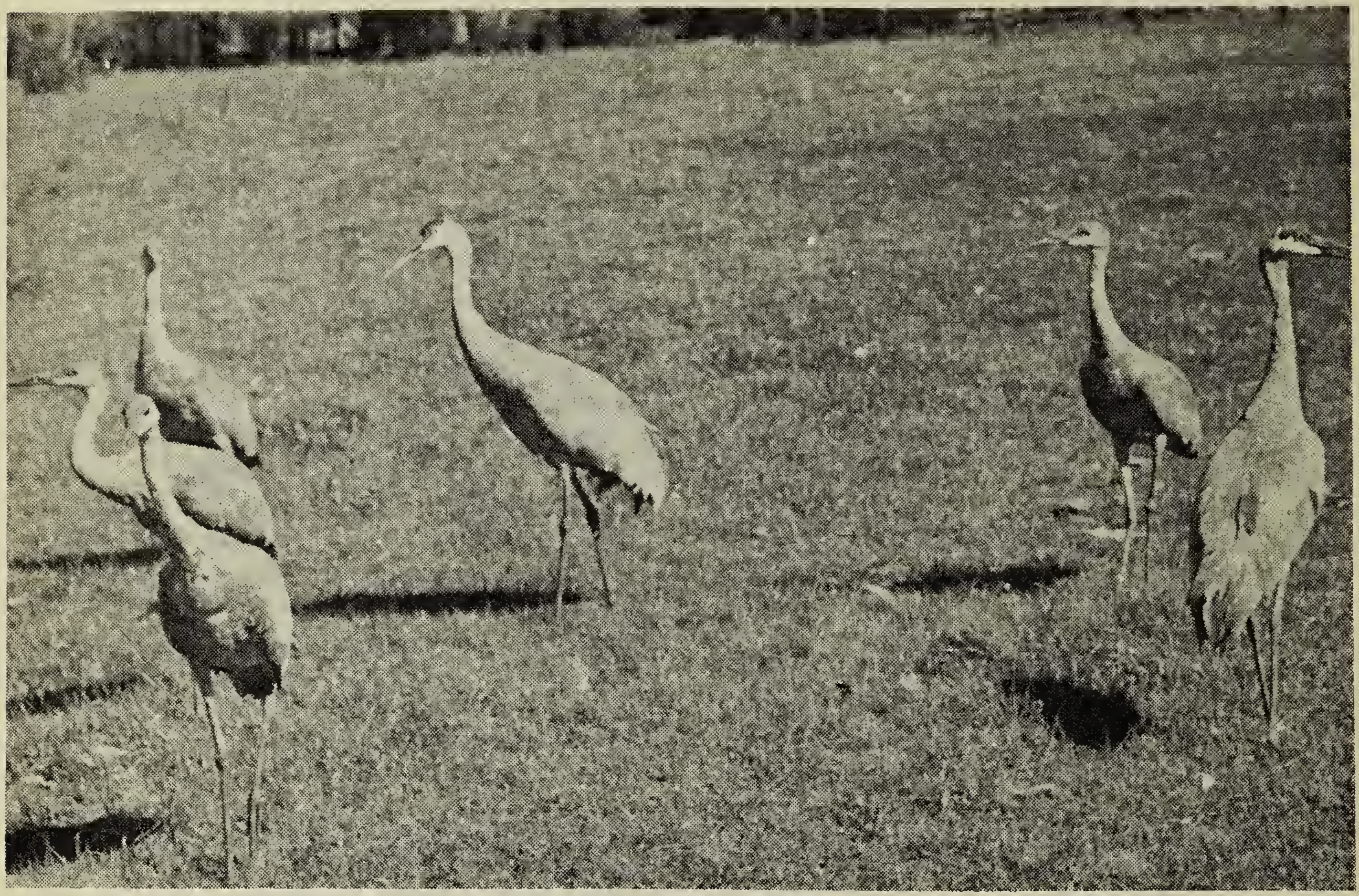


Photo by D. O. Hyde

Greater Sandhill Cranes at Yamsay Ranch and four young raised from them in 1956.

production by furnishing birds to the wild flock. Our four young flew beautifully under this plan, spent as much time in the air as wild cranes, often flying to altitudes of several thousand feet.

Those who have opposed a captive management program for the Whooping Crane have stated that young raised in captivity would be lost to the wild flock. Our experience with Sandhills would indicate otherwise. Very important is the fact that our cranes were perfectly accepted by the wild cranes with whom they flew out to consort almost daily. By September they were taking much of their food from the meadows. Eventually they spent even their nights afield, subject at these times to predators such as coyotes and eagles; yet they were alert and survived.

On the afternoon of November 14, the young cranes were restless and circled high above this isolated valley. Once I called to them as they drifted a thousand feet above my head, and they came in as they always had, and fed for a time at my feet. But they soon went aloft again. Sadly, but a little proudly too, I watched them, knowing that the mighty instincts of migration were taking them away into the darkening heavens.

The thought of what may lie ahead in crane research excites us. We hope to determine whether or not specialized nesters, such as the Greater Sandhills, could be brought through a generation in captivity to be more tolerant of nesting areas which would not otherwise meet their requirements, and thus help the species adjust to a changing environment. What we have learned is but little compared to what needs to be learned. The time to answer the questions is now, not after the species has failed to survive. Research in birds which take two years to mature is a slow process at best. Whatever the results of the research, the flock itself stands ready to go into production, a living guarantee that the Greater Sandhill will never become extinct.

Let us take a closer look at the Sandhill Crane and his personality in captivity. A hand-raised crane makes an affectionate and amusing companion. I have gone on long rides over the meadows and had the sandhills go along, feeding and exploring until I was almost out of sight; then they would fly up to rejoin me. Sometimes when busy I would attempt to escape them and would be trying to corral some wild cattle or steal a ride on a nervous colt, when here would come my gang for a closer look, and their flapping arrival generally turned my work to complete chaos. My wife once planted a whole row of strawberry plants, only to find that the Sandhills had pulled up every plant behind her. Their long bills are never still, probing constantly in the earth; snapping a luckless insect off a blade of grass with pinpoint accuracy, untying one's shoelaces or picking at the buttons on one's clothes. Try to dig a can of angle-worms for fish bait and they'll beat you to every worm. Grain the calves and the Sandhills are in the grain trough for their share. A curious thing is that they never let a plane go over without putting their heads back and uttering an ear-splitting protest. To see the Sandhills dance, one has only to toss a small stick into the air before them. It is seized by the nearest crane who tosses it in turn and the bouncing game is on. One can't help liking the birds. I remember a very solemn and dignified cowboy of sixty-five who came to work for us. I was certain he thought us strange indeed, to have a bunch of cranes about. My fears vanished when I came around the corner of the barn one morning. There was the old cowboy in a ring with the cranes. Hat in hand, arms flapping, a big grin on his face, he was bounding a good three feet in the air with every jump.

Prairie Wildlife Habitat Meeting

The first meeting of wildlife biologists from Manitoba, Saskatchewan and Alberta was held in Regina on January 16 and 17. The purpose of the meeting was to consider habitat requirements of furbearers, upland and migratory game birds.

To provide suitable habitat, the group favoured the acquisition of land by provincial governments. It recommended that the wetlands inventory conducted by Ducks Unlimited in Saskatchewan be: (1) continued, (2) expanded to Alberta and Manitoba and (3) entered into on a co-operative basis by the provincial game branches and the Canadian Wildlife Service. The meeting favored the extended study of habitat requirements of upland game and the exchange of population data between provinces. Discussing the pheasant programme in Alberta, the group considered an experimental hen season for comparison with the traditional cock season and suggested that staggering the opening dates for resident and non-resident hunters for pheasants on the E.I.D. might ease hunting pressure.

With furbearers, the most urgent need in the southern prairies was considered to be a study of habitat requirements of muskrat and beaver.

Waterfowl management requirements include further knowledge of habitat requirements of each species, determination of size, distribution and methods of waterfowl harvest. The problem of depredation by waterfowl, and the question of crow and magpie predation were also discussed. A study of magpie predation on game bird nests is contemplated for Alberta in 1957, because it is felt that the present programme is not "controlling" the predators or increasing production of game birds.

Possibility of initiating an experimental study of Canada Goose nesting in the Quill Lake district was discussed. The project would be carried out by Ducks Unlimited and the Canadian Wildlife Service.

COVER PHOTOS WANTED

If you have photographs that would make suitable cover pictures for the **Blue Jay**, we should be very glad to have them. We want black and white photographs that are sharp and clear, of any wildlife subject taken in the Prairie Provinces. In size, prints submitted should be as large as, or larger than, the actual cover picture. All photographs will be returned.

With your picture, please send details of place and date taken and any other interesting or unusual particulars.

Soil and Water Conservation in Prairie Agriculture

By D. W. KIRK, P.F.R.A., Regina

P. F. R. A. Photo

A small dam built with P. F. R. A. assistance for stockwatering.

The conservation of soil and water can mean different things to different persons and in different places depending upon how the resources are being used and what problems are associated with their use. In prairie agriculture, we speak of it in terms of better land use in which the most pressing problem requiring solution is that of drouth. For the purposes of this article, I shall confine my remarks to this particular aspect of conservation and what is being done to solve it.

Our experiences with drought go back a long way to the time of Palliser in 1857. Captain John Palliser was an officer of the Royal Engineers in His Majesty's Services who had been commissioned in that year to head a scientific expedition to the region. Palliser was directed to explore "that portion of British North America which lies between the North branch of the River Saskatchewan, and the frontier of the United States, between the Red River and the Rocky Mountains." He was specifically directed to explore and examine "the nature of its soil, and its capability for agriculture." Palliser's complete report of his explorations and investigations covering the period 1857 to 1860 was presented to both Houses of Parliament by command of Her Majesty Queen Victoria on May 19, 1863.

Palliser described the open plains of Central North Amerca in part as follows: "This central desert extends however, but a short way into British Territory, forming a triangle having as its base the 49th parallel from longitude 100 to 114 west with it apex reaching to the 52nd paralle of latitude." So, nearly 100 year ago, was set down the first delinea tion of the so-called "drought area, the "Palliser Triangle," embracin approximately 50,000,000 acres.

The Palliser report, however, di not meet with universal acceptanc Later, when building a railway acros the country became a matter of publ interest and controversy, the Car adian Government decided to mak its own investigation. John Macou an experienced explorer and scientis was sent out to examine the "Gre Buffalo Plains" and report as their suitability for settlement. M coun travelled over, for the mo part, that portion of the prairie region traversed by Palliser twenty years before.

Macoun's report was laid before the Government in the winter of 1879. In his book *Manitoba and the North-West*, Macoun interprets some of the conclusions of his report: "Instead of being an arid desert, as Palliser had described it, we found it covered with tall, rich grass . . . very little observation was necessary to correct Palliser's mistake."

Here, then, were two supposedly eminent authorities whose ability to deal with the matters submitted to them could not be questioned. Yet one flatly contradicts the findings and conclusions of the other. The explanation is, of course, that Captain Palliser visited the region during one of its recurring dry periods, while John Macoun made his survey during a period of wet years.

Our history records another period of dry years at the turn of the century; then 1910 was a very dry year, and 1914 another dry year. Drought struck again in 1917, 1918, 1919—three dry years in a row. During these years, there was crop failure over a wide area. The Federal Government had to supply seed grain and come to the relief of the needy settlers in other ways. The 1920's were good years over most of the prairie region. During this time there was progress and prosperity. Farmsteads dotted the landscape. Towns and cities were being built, and wheat—hard wheat—was King. In 1928 the production of hard spring wheat broke all-time records. Palliser was forgotten. Then came catastrophe. Drought struck again with unprecedented severity. For nine long years it persisted. The once green countryside lay buried in a layer of drifting soil as black blizzards swept over the plains, blocking roads, filling shelterbelts and half burying farm buildings.

Those were terrible years, years that broke the faith and will of all but the most stouthearted. The Palliser report was taken down, dusted off and re-read, and there was no little speculation that maybe Palliser was right after all.

In one simple sentence, then, the problem of agriculture on the open plains can be stated. It is problem of climate—low and variable rainfall. Hundreds of millions, yes billions, of dollars of new wealth have been produced in that section of the country condemned by Palliser; while, during the same period, devastating droughts have also been experienced in the same region, which would have confounded the conclusions of even such a man as Palliser.

The challenge posed to the conservationist by prairie agriculture, therefore, was to evolve a system of farming which would make the most efficient use of the limited water resources at our disposal, and at the same time maintain unimpaired the inherent fertility and productivity of the soil. Under dry land farming conditions, this means developing systems of cropping which will conserve soil moisture and spread its usefulness for growing crops over a longer period without injuring the physical quality of the soil and without creating such hazards to farming as soil drifting.

The "fallow" system is, of course, our most widely used method of conserving soil moisture and while its use leaves much to be desired from a soil-building and soil-conservation standpoint, no better substitute has been found, and it has continued to be used as the lesser of two evils. The introduction of power farming, fortunately, has modified the system to the extent that its most harmful effects on soil have been eliminated. Surface cultivation and the use of "trash cover," as well as strip-farming practices, have all but eliminated the hazards of soil drifting on the heavier lands. The lighter lands, which have a greater tendency to drift, have been withdrawn from cultivation and sown down to permanent grass cover for use as pasturage for livestock.

Research and experimental work has given us a more fundamental knowledge of those factors which influence the conservation of moisture in soil. We know, for example, that through the use of recommended summerfallow practices, it is possible to conserve in the soil 20% to 30% of the rain that falls during one season as a reserve of moisture which can be used for growing crops the following year. We also know that wheat uses less moisture than any other cereal crop and that a crop of wheat will require about one inch of water in the soil to produce every two bushels of wheat harvested. The type of tillage implement used has no effect on the conservation of soil moisture which depends rather on the ability of the farmer to use his equipment wisely. Again, weeds on fallow or in the crop are efficient users of moisture and reduce the yield accordingly.

With the preceding facts in mind it has been possible to develop definite policies and practices designed to eliminate some of the factors that use soil moisture.

By relating the depth of moisture penetration in a soil to crop yields, we can estimate fairly accurately what chances we have of growing a good crop in any given year. By timing our summerfallow practices properly to control weeds, an increase in crop production of from five to nine bushels per acre can be anticipated. We know that excessively deep cultivation will waste an excessive amount of soil moisture through evaporation and reduce crop yields accordingly, as well as encourage soil drifting. These are but a few illustrations of conservation in action in the plains area as related to dry land farming operations.

It would be wrong, however, to believe that the job has been completed when these practices are adopted and religiously practised. We should be wasting a valuable resource and an effective deterrent against drought if we did not give due consideration to the conservation and use of water unable to find access into the soil and accumulating on the surface of the land. This is usually surface runoff water from melting snow which runs off the surface of the land while the ground is still frozen, to accumulate in low-lying areas or run to waste down streams and rivers to the ocean.

Over most of the drought areas there is insufficient rainfall to maintain natural bodies of water, springs and shallow wells. The use of surface runoff water to supplement this supply is therefore of primary importance. This is particularly true for the livestock industry which depends upon an adequate and dependable water supply and assured feed supplies produced on irrigated land.

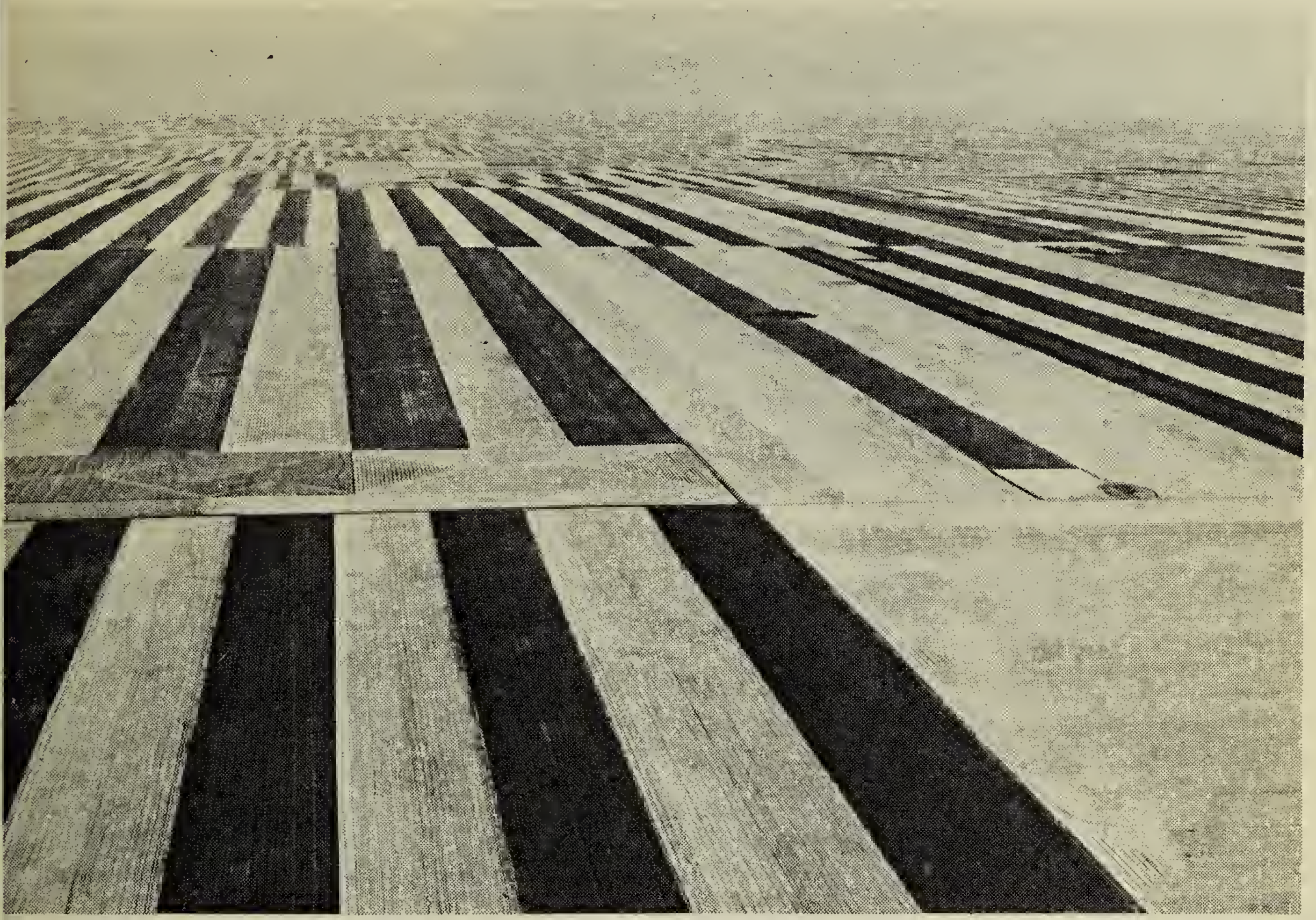
In spite of the importance of this surface runoff water, the potentialities of developing its use on prairie farms have been least appreciated. On practically every farm in Saskatchewan suitable sites can be located for the establishment of water development works which can be used to advantage for a multitude of farm purposes.

The two most common types of projects built are the "dugout" (farm pond) and dam. Wherever land with sufficient drainage area slopes toward a focal point in a field, there is an ideal location for a dugout. A dugout 12 feet deep, 65 feet wide and 165 feet long, will store more than one acre-foot of water, or the runoff from about 50 acres. Since 80% of prairie runoff comes from snow, snow traps, tree belts, stubble or anything that catches snow will increase the runoff in any desired area and thereby reduce the size of drainage area necessary.

Many suitable sites can also be located for the construction of small dams on creeks or in coulees. The average-sized farm dam will store about one acre-foot of usable storage. Care must be taken, however, to select a site where there is sufficient bank on both sides of the channel to give good depth to the reservoir—ten feet, or even better fifteen.

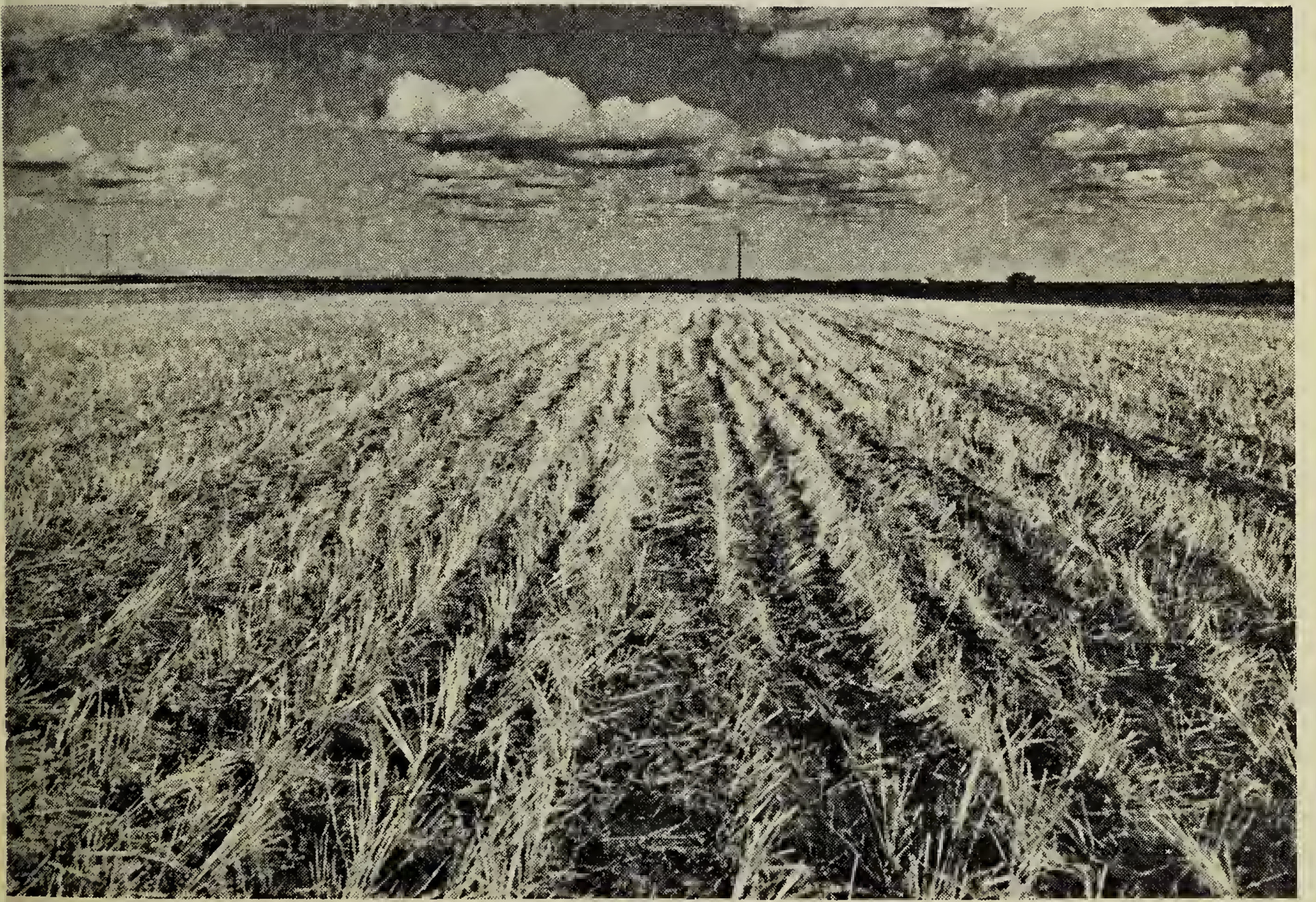
Under prairie conditions of sun and wind, runoff water is generally of excellent quality, superior in many instances to that which can be obtained from local wells. In addition to its uses for irrigation and stock-watering, therefore, its use for home consumption is rapidly expanding.

Finally, to complete the soil and water conservation picture, brief reference at least must also be made to the establishment in recent years of large scale irrigation and reclamation projects in Western Canada, involving the development of millions of acres of land. Such developments are in line with Canada's long-range land use plan to provide for expansion and stability in Canada's growing economy. Of an estimated 30,000,000 acres of potentially irrigable land in Western Canada 1,000,000 acres have been, or are in the process of being, developed unde this plan. The aim is, when condition warrant, to develop the remainder o this valuable resource.



P. F. R. A. Photo

Strip farming has become a byword in prairie agriculture as an effective control against soil drifting.



P. F. R. A. Photo

Use of trash cover on summerfallowed land to conserve moisture and reduce the possibility of soil drifting

SUMM

Cypress

Sask. Gov't. Photo

Headquarters of the meet Cypress Hills Prov. Park, with main buildings along the lake front in cool coniferous forest of the high plateau.

Photo by Fred Bard

White-tail fawn in the Cypress Hills. If you are also interested in birds, look for Audubon Warbler, Pink-sided Junco and Long-tailed Chickadee.

Photo by Fred Bard

View from Bald Butte, favourite lookout in th
Cypress Hills. Note lodg
pole pine, characterist
of the area.

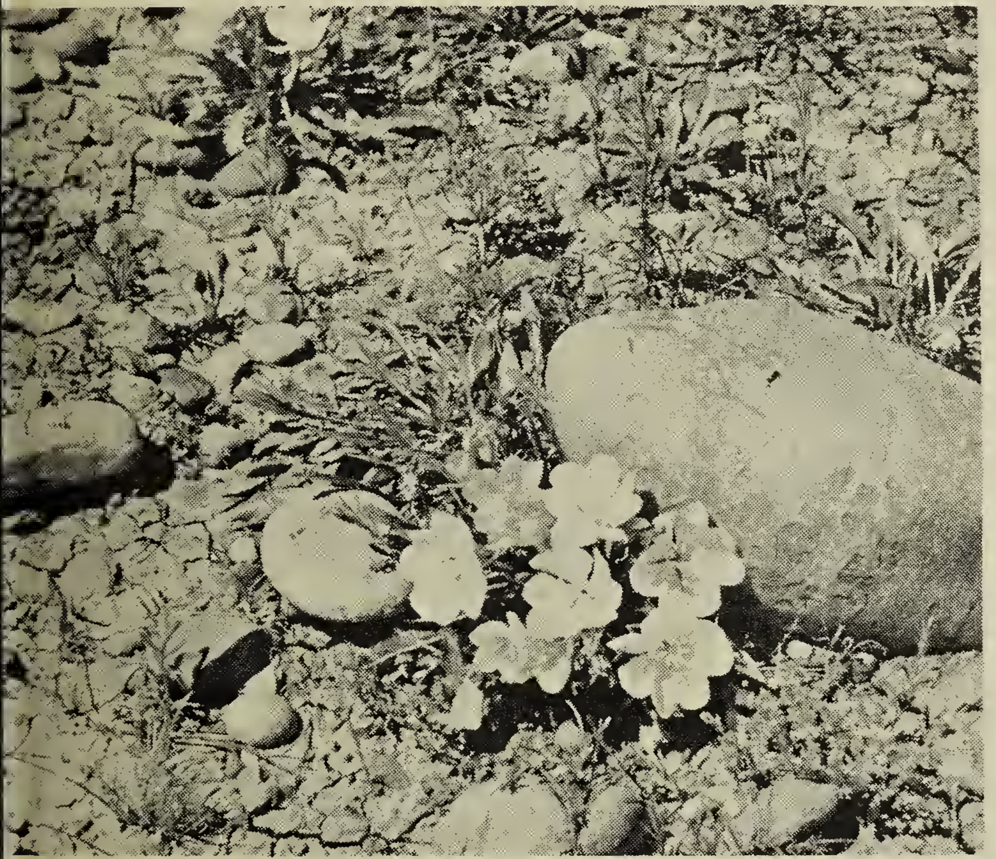
TING

15-16

Ranching country. Photographed during filming of movie "Face of Saskatchewan" in the Cypress Hills area.

Sask. Gov't. Photo

Photo by Fred Bard



Rock Rose. There are also many alpine flowers. Budd lists five species of flora not found elsewhere in Saskatchewan.

P. F. R. A. Photo

Cypress Lake Reservoir constructed by the P.F-R.A.

Geology of the Cypress Hills

By JOHN HOWARD HUDSON, Regina

The most casual visitor to the Cypress Hills of Saskatchewan mus sometimes wonder what these highlands are made of, and how they cam to be. I shall attempt briefly to present the findings of geologists in thi intriguing area.

Let us first look at a simple geologic column of the formations (roc layers) out of which the Hills are carved.

Formation	*Thickness, in feet*	*Composition*	*Geologic Period*	*Time, years ago*
Glacial Drift	0-200(?) Generally scanty	Mixture of clay, sand and boulders	Pleistocene	25,000-1,000,000
Cypress Hills	300-550	Mostly hard conglomerate-quartzite cobbles mixed with sand and cemented	Oligocene	About 30,000,00
Ravenscrag	0-230, generally about 200	Mostly yellowish silt, some grey clay, and coal	Paleocene	60,000,000-70,000,000
Frenchman	10-200 generally 60-80	Some yellow sandstone, much grey clay, no coal	Upper Cretaceous	70,000,000-100,000,000
Battle	0-40, usually 15-25	Black clay	Upper Cretaceous	70,000,000 100,000,000
Whitemud	50-75	Chalky white clay	Upper Cretaceous	70,000,000 100,000,000
Eastend	About 70	Grey sand; much grey clay	Upper Cretaceous	70,000,000 100,000,000
Bearpaw	900-1000	Sterile grey clay	Upper Cretaceous	70,000,000 100,000,000

These formations are poorly exposed in the Park and elsewhere along the north side of the hills, owing to a heavy coating of glacial drift. For good exposures, one must go to the southern slopes, especially the valley of the Frenchman river around Eastend. Ravenscrag Butte, on the north side of the river between Eastend and Ravenscrag, exhibits these strata in most impressive cliffs.

The geologic history begins, for the purposes of this discussion, with a great Upper Cretaceous sea depositing the Bearpaw shale. This sea withdrew eastward; more exactly, the land rose, starting at the west. The sands of the Eastend formation mark the changes from shallow sea to low land built up at river mouths. T Whitemud, Battle, Frenchman, a Ravenscrag formations are all no marine, laid down on land by rive draining down from the rising Roc Mountains. The Whitemud (which mined for ceramic clay at Easten carries fossil leaves of hardwood tre . Fossils of horned dinosaurs, amc g the last of their race, have be n collected from the Frenchman alc g Conglomerate Creek northwest f Eastend. The coal of the Ravensc g indicates moist flats thickly cove d with mixed forest; apparently t much uplift was going on just th i. Later on renewed uplift caused e rivers to cut down and erode se - ment, rather than deposit it; and o r most all of Southern Saskatchewan plift and erosion have continued, terrupted by the Ice Age, until the esent day.

In the Cypress Hills region matters ok a somewhat different turn. bout Oligocene time there must ave been a fairly sudden uplift in e Rocky Mountains; one or more vers were able to carry pretty fair zed cobbles (up to eight inches ross) of hard quartzite down from e mountains and deposit them upon e plains. This is the origin of the ypress Hills conglomerate, that hard yer which now caps the hills. This ver-laid conglomerate most likely nce extended much further north nd south than it does now. It has een eroded away by rivers except top the Cypress Hills; they stand ecause this is where the divide be-veen north and south flowing river ystem happened to be before the e Age. The height and steepness the slopes comes about because e hard layer overlies a great thick-ess of soft rocks. If a river cuts rough such a hard layer, the soft yer all waste speedily away; but e soft layers cannot be attacked ntil the hard layer is cut through. emphasize that the Cypress Hills re not uplifted folded mountains ke the Bearpaw Mountains 60 miles the south; geological reports dis-gree about the position and even e existence of faint folds in the ills.

The last major event in the geo-gic history of the Cypress Hills was e Ice Age. The great ice sheets ming from the northeast had lost lot of pep by the time they arrived ere. There are no glacial deposits bove 4500 feet (that is, in that part the West Block west of Battle reek); and on most of the rest of e plateau, or Main Bench, the odd rratic (limestone or granite boulder) here and there make up the evidence for the presence of continental ice. During most of the Ice Age the edge of the ice sheet lay up against the north face of the plateau, depositing morainic debris there. The south side was only rarely iced over, and what ice was present was present seems largely to have flowed around the east end, by way of Dollard. The chief result of the Ice Age in the Cypress Hills was that, since the ice lay to north, the south-flowing rivers were able to cut their valleys headward right up to the ice front, almost across the hills—Belanger Creek in the Park is a fine example.

For those who wish to pursue the subject further the following reports (from which much of this has been cribbed) may be of interest.

COLOURED PRINTS OF MUSEUM HABITAT CASES

The Regina Natural History Society has for sale coloured prints of Museum habitat cases. These are the reproductions that have been used for covers for the Saskatchewan Teachers' Federation *Bulletin*. Size 6"x10", with short descriptive text. Price: 15c per print, or $1.25 per set of seven in special envelope. Subjects: Whooping Crane, Pelican and Cormorant, Great Blue Heron, Beaver, Wolf, White-tailed Deer, "Bambi".

Write:

MRS. MARIE ROBINSON
Secretary, Regina Natural History Society
2100 *York St., Regina*

YPRESS LAKE MAP-AREA, by G. M. Furnival. Geol. Surv. Canada Memoir 242. Queen's Printer, Ottawa, 1946.

EOLOGY OF EASTERN CYPRESS HILLS, by W. O. Kupsch. Sask. Geol. Survey Report No. 20. Queen's Printer, Regina, 1956.

EOLOGY OF SOUTHERN SASKATCHEWAN, by Fraser, McLearn, Russell, Warren, and Wickenden. Geol. Surv. Canada Memoir 176. Queen's Printer, Ottawa, 1935.

EOLOGY OF THE SOUTHERN PART OF THE CYPRESS HILLS, by L. S. Russell. Sask. Geol. Survey Report No. 8. Queen's Printer, Regina, 1948.

FLOWERING SEQUENCE OF SPRING PLANTS.

Crocus Anemone

2

Musineon

3

Dandelion

4

Moss Phlox

5

Whitlow-gras

16

Early Blue Violet

15

Smooth Blue Beardtongue

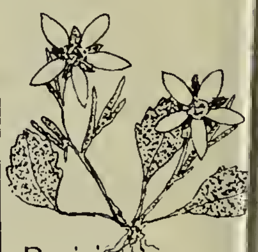
14

Three-fld Avens

No. PLANT.	Average date of flowering.
1. Anemone patens	April 20
2. Musineon divaricatum	" 27
3. Taraxacum officinale	" 27
4. Phlox Hoodii	" 30
5. Draba nemoralis	May 3
6. Ranunculus rhomboideus	" 3
7. Androsace septentrionalis	" 6
8. Carex filifolia	" 7
9. Potentilla concinna	" 7
10. Carex eleocharis	" 10
11. Astragalus triphyllus	" 10
12. Thermopsis rhombifolia	" 10
13. Lesquerella arenosa	" 11
14. Geum triflorum	" 13
15. Pentstemon nitidus	" 15
16. Viola adunca	" 21

Arch. C. Budd.

6



Prairie Buttercup

7

Pygmy-flowe

8

Thread-lvd. Se e

13

Bladder-pod

12

Golden Bean

11

Cushion Milk-vetch

10

Low Sedge

9

Early Cinque

Prairie Sunflowers

By LLOYD T. CARMICHAEL, Regina

> *"The Sunflower turns on her god when he sets*
> *The same look which she turn'd when he rose."*

So sang Moore, the Irish bard, fact, nfortunately, refuses to corroborate is romantic fancy. It must have een a poetical illusion, for I have vatched these flowers for many ears and have come to the conlusion that *Helianthus* does not turn s golden flower-face from east to vest to follow the course of the sun od, but on the contrary, remains in he same position all day long.

The sunflowers are true natives of he prairie. Long before this country vas settled, their golden heads beauified the autumn landscape in every irection. Lewis and Clark, our pioeer botanists, tell how they were reasured by the Indians, who saw n them not only inspiration for their un dances, but a never failing supply f small oily seeds, from which they nade their nutritious flour and their ounded loaves of bread.

Helianthus is truly a flower of the un. Its name is very appropriate, eing derived from helios, "the sun," nd anthos, "a flower." I have selectd for our consideration three species vhich I think are the most beautiful nd conspicuous. They can be readily dentified from photographs alone.

The first picture shows the Comnon Sunflower - *Helianthuus annus.* t is our largest species, the heads eing as much as six inches across. The stem is rough and the leaves are ovate and coarse. It is an annual, thriving best on heavy clay soils, such as we have around Regina. Cultivation has driven it to the roadside where sometimes it forms a series of golden hedges for miles and miles.

The second photograph is one of the Narrow-leaved Sunflower, sometimes called Maximilian's Sunflower (*Helianthus maximiliani*). This, like all our other sunflower species except the first mentioned, is a perennial. Fairly dense clusters of the plants are commonly seen in roadside ditches. They may be four, six or eight feet in height. Their very narrow leaves, often folding along the mid-vein, and their yellow disks are distinguishing characteristics.

I think the most beautiful of all our species is *Helianthus subtuberosus* - the Tuberous-rooted Sunflower. It grows as tall as Maximilian's, but in the moist soil of saline meadows. Its name is derived from its tuber-like roots. You will note that the leaves are quite narrow and pointed at both ends. They are stalkless. The disks are yellow. The flower heads—four or five of them are borne at the ends of long stems. Often two or three plants are sufficient to form as lovely a bouquet as can be found in any meadow.

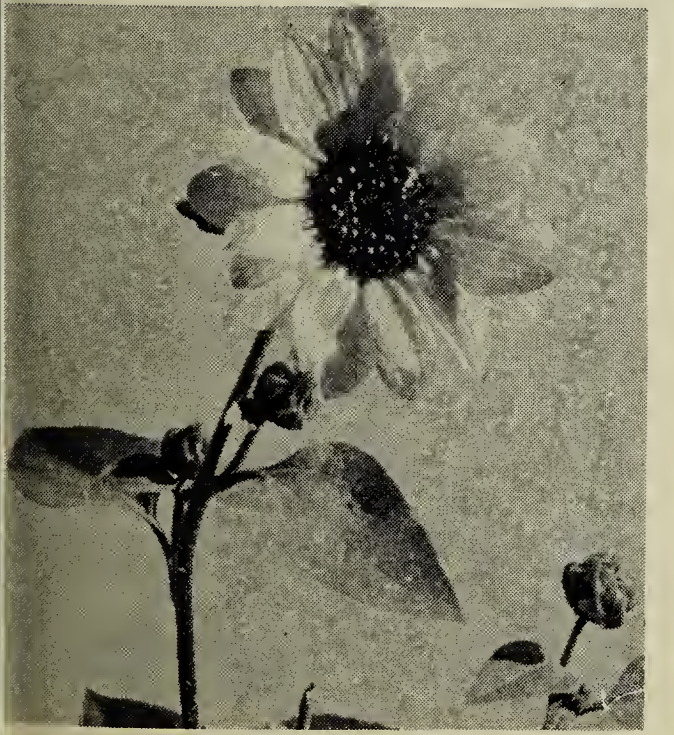


Photo by L. T. Carmichael
Common Sunflower, *Helianthus annus*

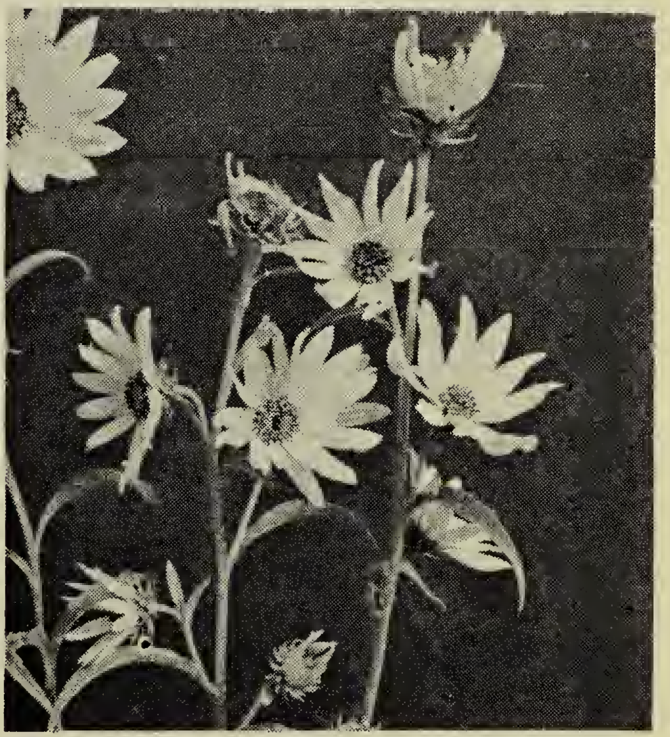


Photo by L. T. Carmichael
Narrow-leaved Sunflower, *H. maximiliani*

Photo by L. T. Carmichae

Tuberous-rooted Sunflower, *Helianthus subtuberosus*

Eremopoa Persica (Trin.) Rosh. in Manitoba

By GEORGE A. STEVENSON.
Dominion Experimental Farm, Brandon, Manitoba

About the middle of July 1955, while crossing the C.N.R. freight yards in Brandon I noticed a small annual grass about five or six inches high with which I was not familiar. A number of specimens were collected and in November duplicates were sent to the Division of Botany. Central Experimental Farm, Ottawa, for identification. Dr. W. G. Dore, the first botanist to examine the grass, identified it as *Eremopoa persica* (Trin.) Roshev. and this determination was confirmed later by Dr. N. L. Bor, Royal Botanic Gardens, Kew, England, who is familiar with the genus. Dr. J. R. Swallen, United States National Herbarium, also examined a few specimens of the original collection—Stevenson 945—and stated in a letter to Dr. Dore in December that it had not yet arrived in the United States. The Brandon collection therefore appears to be the first record of *Eremopoa persica* growing spontaneously on the North American continent.

The station was visited again o the 15th of June, 1956. The mai patch covered an area of about ha an acre and was located at the we end of the Canadian National freigh yards in Brandon. The heaviest cor centration of plants was close to th junction of 8th Street and McTavis Avenue, or roughly about the cent of the infested area. The eastern ed of the patch was fairly well define but occasional plants were found a along the roadbed leading to the CN station, a distance of about 800 yar in a north-westerly direction. the south plants were scattered spur tracks and around coal she which are quite common in the d trict. Plants appeared to be confin more or less to ballast and coal-i pregnated soil, but I would like confirm this observation by clo and more detailed study during season of 1957 when I hope t time will permit me to make a m thorough investigation.

Eremopoe persica is a weak ann

ass native to the countries of the ear and Middle East (Asiatic Tur- ey and Syria to the Caucasus and orthwest India), where it is found n sandy soils and occasionally in ltivated fields and gardens. It has en introduced to several Western ropean countries and has been col- cted on port and inland rubbish mps in the British Isles. Dr. G. aylor, Director of the Royal Botanic ardens at Kew, suggests that it ight be worth while searching for it those parts of Canada where *olium persicum* is a bad weed, since ese two grasses might have a com- on origin. It may have been intro- ced in packing or in Russian or ersian wheats or the seed of other crop plants, or it may have escaped from the experimental plots of certain institutions where it has been used in cytological investigations. When it became established at Brandon is not known—how many years ago would be only a wild guess—and where it came from is still a mystery.

Specimens have been deposited with the DAO Herbarium; the National Herbarium, National Museum of Canada, and the University of Manitoba. A number of specimens are preserved at Brandon and it is hoped that at least some of these will be available to those interested throughout 1957.

SUMMER MEETING — CYPRESS HILLS
June 15 and 16, 1957

The Saskatchewan Natural History Society invites members and friends to meet this year at the Provincial Park in the beautiful Cypress Hills. Field trips are being planned for two days. Mid-June may still be cool in the high altitudes of the Cypress Hills . . . bring warm clothing.

RATES AND FACILITIES: Lodge rooms (1 bed)—1 person, $2,00;
2 persons, $3.00.
Cabins (L.H.K.), Non-modern—2-3 persons, $3.50; 4-6 persons, $4.50.
Modern—4 persons, $6.50-$8.00; 4-6 persons, $8.00-$9.00.

Meals served in Chalet. RESERVATIONS SHOULD BE MADE EARLY. Write—

F. G. Walker, Manager, Cypress Hills Prov. Park, Maple Creek, Sask.
Please mention the Society when making reservations.

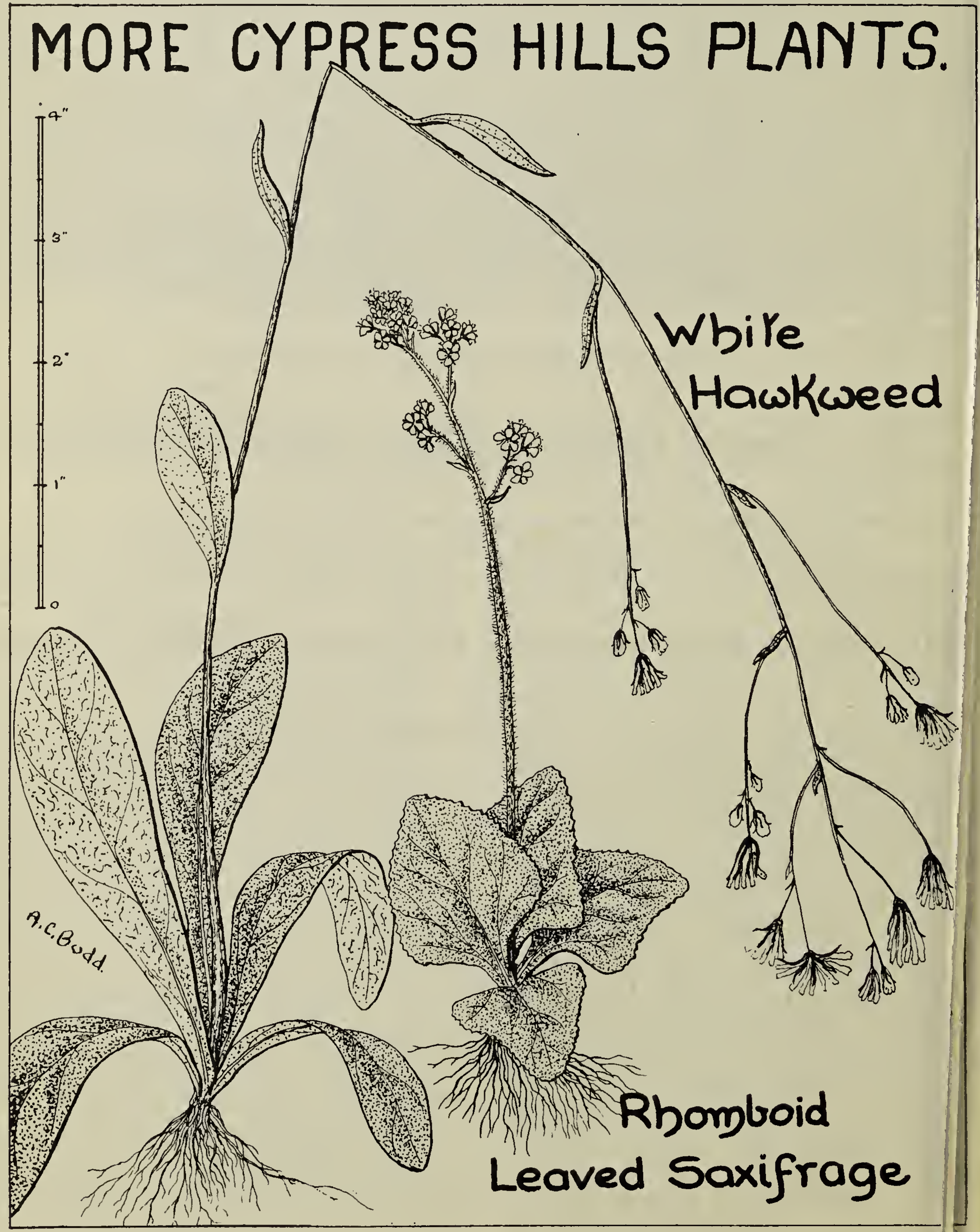
till More Interesting Cypress Hills Plants

By ARCH C. BUDD, Swift Current

In this issue we can consider two ore plant species for which the only skatchewan locale is the Cypress lls. Both of these are Cordilleran mountain species and are found the eastern Rockies. The Rhom- id-leaved Saxifrage (*Saxifraga omboidea* Greene) is quite rare re and is found on exposed grass- nd at an altitude of over 4,000 feet. generally grows to a height of om 5 to 8 inches and bears a cluster basal, fleshy, rather thick, dark- een leaves, usually from ½ to 1½ ches long. The leaves are ovate, unded at the apex and somewhat untly toothed and the blades are nerally contracted to an almost uncate base and then are decurrent, continue down the stalk. A glandular-hairy scape or stem from 4 to 12 inches high, arising from the rootcrown, bears the inflorescence. The flowers are white, about 3/16 of an inch in diameter, arranged in a compound cyme or several cymules, each with a small bract below. The fruits are small follicles which open with spreading tips to release the seeds. This species is also called *Micranthes rhomboidea* (Greene) Small and has also been placed by some authorities as *Saxifraga nivalis* L. the European Alpine Saxifrage. It is found throughout the Rocky Mountains from southern Alberta to Arizona.

The second plant is the White Hawkweed (*Hieracium albiflorum* Hook.), a member of the Liguliflorae or Chicory sub-family. It grows from one to two feet in height and bears a rosette of spatulate-shaped basal leaves, each from 2 to 5 inches long, with fine scattered hairiness and of a pale green colour. The stems bear a few to several stemless leaves, reduced in size and less hairy than the stalked basal leaves. The flowers, which are in an open, branched corymb at the head of the stem, are about half an inch across with white or very pale cream-coloured ligulate florets, and very narrow involucral bracts. The seeds bear a sordid or dirty-white papus. This plant is fairly plentiful in openings in the pine forest and along the forest pathways of the Cypress Hills, but is not found again until the eastern foothills of the Rockies.

There are three other plants peculiar, in Saskatchewan, to the Cypress Hills. These are Spring Beauty, (January-March 1953), Wild White Geranium, (April-June 1949), and Yellow Monkey-flower, (Mar. 1956)



Children as Naturalists

By JOYCE DEW,
Saskatchewan Museum of Natural History

In the September 1955 issue of Harper's magazine is an article by Bernard DeVeto entitled "Hell's Half Acre, Mass." It is a poignant plea from a man with metropolitan tastes who none the less believes in the necessity of maintaining areas of our country in their natural condition. He deplores the fact that modern civilization is more and more encroaching upon our natural areas and that so little is being done about it. He sums up the situation in the United States by saying, "For everywhere natural areas, semi-natural areas, and wholesomely disregarded areas in a partially natural state, are being obliterated. The growth of towns, cities and industries is swallowing them up. No end to this process can be imagined, and it is irreversible." This irreversible factor is the important one we have to impress upon our children, so that when they take on the responsibilities of adults, they will have gained an everlasting appreciation of our natural resources and regard them as sacred—something which when once destroyed can never be retrieved.

Regina youth are in a particularly fortunate position for here people with foresight are conserving at least one natural area, the Wascana Waterfowl Park, within our city limits. This is a good example to set for the youth of today who will be the responsible adults of tomorrow.

The underlying purpose of all that we in the natural history educational field are doing with children, is to stimulate them to seek direct contacts with nature. As children acquire knowledge of their natural surroundings their appreciation will grow, and this appreciation will lead to their wise use of our natural resources. Nor is this the only benefit to be derived from a closer contact with nature. By making careful first-hand observations of what they see they can contribute to our common fund of knowledge. This is equally as important as their becoming conservation-minded. As those of us who work with them know, children make keen factual observations. They have a tendency to observe things with a freshness of vision which we adults are frequently incapable of. This keen sense of observation linked with an active curiosity and an interest in the things around them makes them good naturalists. It is our purpose through the Boys' and Girls' Section in this journal to encourage young people to observe nature at first hand and to experience the thrills of discovery. This will be of personal benefit to the child, his horizons will be widened, his senses awakened, his imagination stimulated and his life as an adult will be enriched through interests developed as a child. Through writing to us these young naturalists will be in a position to benefit others too, including those doing scientific studies. In the process it is difficult to say which comes first or benefits more, the cause of conservation or the development of knowledge, for these aspects of natural history are inseparable and interdependent. That young people can make valuable contributions is beyond any doubt.

Wilfred H. Osgood in his biographical sketch of Ned Hollister, a well-known naturalist, states, "It is not uncommon for naturalists to show their inclinations early in life and they often make real contributions to knowledge while still in their teens." Ned Hollister himself, in his book "Birds of Wisconsin" used some observations which he made at the age of twelve.

We feel the "Blue Jay" affords an excellent opportunity for young naturalists to express themselves and publish their observations. If these observations are accurate they will add to our fund of scientific knowledge, and through knowledge foster the cause of conservation. You can co-operate with us by drawing the attention of young people to this section of the "Blue Jay."

Boys' and Girls' Section

EDITOR'S NOTE: We welcome to the editorial staff of the *Blue Jay*, Miss Joyce Dew of the Museum Extension Services who has consented to take charge of the Boys' and Girls' Section in 1957. Our grown-up readers, as well as the officers and directors of our society, have felt for some time that we should expand this department of the magazine in order to give more space and more encouragement to contributions from our younger readers. With the co-operation of all these young people and the helpful direction of Miss Dew, we look forward to many more pages of stories and sketches telling us what most interests you in the world of nature.

New Contest for All Young Readers!!!

A new contest has been especially planned for all young readers of the **Blue Jay.** Read the rules and the long list of books offered as prizes, and then keep your eyes open for interesting things that you can record with your camera or in your sketch book, or that you can tell others about in a poem or story.

HERE ARE THE RULES:

1. Entries must be first-hand observations in the form of letters, stories, poems, black-and-white sketches, or photographs. Letters and stories should not exceed 500 words.
2. All entries must be accompanied by the name, age, and address of the sender, and the name of his or her school.
3. Entries should be addressed to Boys' and Girls' Section, **Blue Jay,** 2335 Athol St., Regina. The closing date for the next issue of the **Blue Jay** is April 15.
4. This contest is open to any young person. If you send in something good that we feel is of adult level we will print it elsewhere in the **Blue Jay.**
5. Entries from students may be sent in by the teacher or by the students themselves.
6. Teachers who send in entries from their pupils also qualify for a prize. One teacher will be chosen each time from among those who have sent in prize-winning entries from their pupils.

Prizes: Prizes will be donated by the Saskatchewan Natural History Society. Three prizes will be awarded to student entries each issue provided they are of prize-winnin standard. The prize winners are t select their prize from the followin list of books: **The Peterson Fiel Guide** series (birds, butterflie mammals, rocks and minerals, tree and shrubs, amphibians and reptile ferns) Wherry's **Flower Guid Photography for Teenagers,** or year's subscription to **Canadia Nature.**

Note: The prize last issue w donated by Mrs. H. Newton, Indi Head, Sask.

PRIZE-WINNING STORY:

Our Friend the Red Squirrel

By KATHY SKINNER, 14, Indian Head, Sask.

Late last February, when we had lots of snow, a little squirrel was seen quite often in the pine trees next to our home. As squirrel food was scarce about then, we put out a few nuts for the little fellow. Before long, he would sit on the back fence and eat nuts, right in front of us!

After he got quite used to seeing us in his daily visits we would kneel outside motionless, with a few nuts in our hand. Squikker, as we called him, would stretch himself out flat on his stomach, and hop right up to us, grab a nut and bound away.

He gradually got used to this ty e of feeding, and every day he wou l show up to be fed. You could pla e a nut on your shoulder, and e would climb up your arm, sniff g all the time, get the nut and r . After about three months Squik r would come into the house, sit n the table to eat nuts, getting up y means of a chair. He would e n run through all the rooms, end g up running from one end to e other of the piano playing a tun

But suddenly, in the middle of

July, he stopped coming to see us. We were quite worried for fear that a cat had gotten him. There was an abundance of berries and wild hazel nuts in the bushes at that time. No doubt he had a sufficient amount of food. Would he return with a family or would he return at all?

Little Squikker didn't show up till after harvest in October. Mom had just stepped out the back door one morning when she felt something scurry across her feet. She looked down and there was Squikker the squirrel. He was fatter and a more brilliant red color than ever. With his bushy little tail curled up over his back there he sat waiting for some nuts. After giving the house a tour of inspection and running along the keys of the piano he came back into the kitchen for lunch. He wasn't at all scared as we expected him to be after his long absence. Since then Squikker has continued to visit us at least four times a week.

Our little squirrel is one of the most interesting pets you can find. It is most amusing to watch him haul chunks of suet much larger than himself up into a tree to park them until needed. His favorite nuts are filberts, though he refused to eat peanuts.

Yes, we enjoy our little friend, especially when he sits up in front of the window with his little fore paws folded over his fat little tummy, chattering to let us know he is visiting.

* * *

NOTE: Kathy's letter has raised several interesting points. She mentioned that there was an abundance of hazel nuts for the squirrel to eat when he disappeared during the summer. Ernest Thompson Seton in writing about this mammal makes the following statement, "The Red-squirrel is above all things a cone eater. He is specialized to live on resinous cones; and where there are no cones, there we shall find no Red-squirrels." Seton was certainly an excellent naturalist and one whose books are well worth reading, but the above quotation points out the necessity on our part for critical reading and making careful observations of our own. Speaking in general terms Seton was right, for the majority of our Red Squirrels do feed principally on cones, but there are a few rather noticeable exceptions to the rule since some of these mammals live in parts of the Qu'Appelle Valley where there are no coniferous trees.

Another good observation of Kathy's is the seasonal change in color of the pelage which the Red Squirrel undergoes.

For general information we might add that the squirrel is of considerable economic importance to some of our northern inhabitants. Squirrel pelts sold in this province bring a total of $800,000 a year with over 6,000 trappers harvesting them. This harvest takes place principally in the mixed wood areas of our province.

The Pine Grosbeak

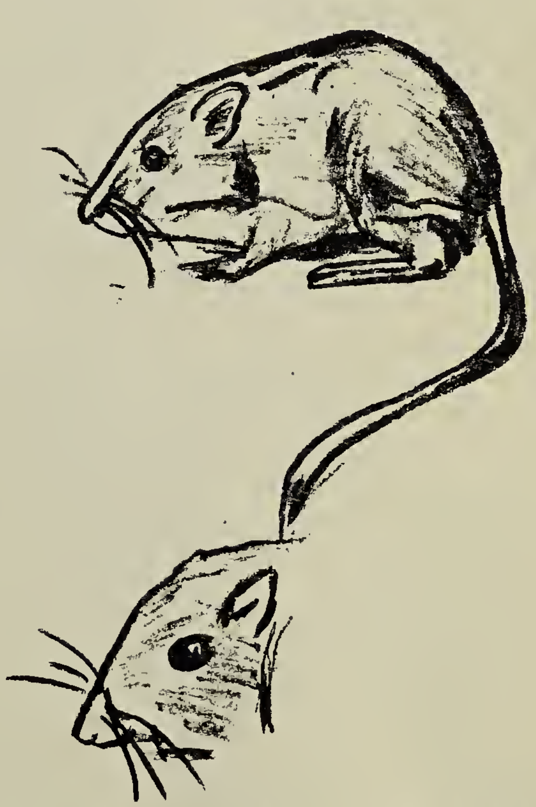
By Margaret McLaughlin, 10,
Indian Head, Sask.

When I looked out the window
I saw a pretty bird,
I'm sure it was a Grosbeak
With the first winter song I heard.

Suddenly he turned and looked
Through the window at me.
He said, "My life is very interesting
I'm sure you'd like to see.

'I eat fruit in the winter
When it is very cold,
Though most birds fly south
I stay because I'm bold.

'I like to make my nests
In the coniferous trees,
These little nests
Help me not to freeze."



Sketch of Kangaroo Rat by Doreen Jasper, 13, Regina, Sask. The live Rat, taken near Sceptre, Sask. (see *Blue Jay*, Dec., 1956) is at present on display at the Museum.

Saskatchewan Silver-haired Bat Records

By ROBERT W. NERO, Saskatchewan Museum of Natural History

Published information on the distribution of mammals in Saskatchewan, as indicated by Fuller (1943), is extremely limited, particularly in the case of smaller mammals such as the bats. This situation is partly the result of a scarcity of records. The area involved is large and remote — the determination of the fauna of this province as well as its distribution and significance is neccessarily an immense task. The extent to which naturalists and other interested individuals can contribute to this end may be demonstrated by the present paper.

The Silver-haired Bat (*Lasionyceteris noctivagans*) is a medium-sized and blackish-brown bat. The hairs of the back and belly are usually tipped with silvery-white hence its name. Its wing-spread measures from 11 to 13 inches. Cameron (1951:7) considers it to be "rather rare" in Canada, although it has been stated by C. H. Merriam to be the most abundant bat in the Adirondacks of New York (Hamilton, 1943:81). In contrast with several species which breed in colonies this bat is usually thought to be solitary in habits (e.g., Burt, 1946:111). Hamilton, however, states that at times it is sociable" . . . often congregating in vast numbers." (1943:81). According to most authors it is found in wooded areas near water, and it is generally known as a "tree bat." It is distributed from the Atlantic to the Pacific, over most of the United States and the southern half of Canada.

Cameron states (1951:7) that the Silver-haired Bat has been recorded in Canada from Quebec west to Alberta, but Anderson also lists it for British Columbia (1946:29). This species is thought to occur throughout Alberta in the forested areas (Rand, 1948:63). Bailey (1926:212) said that it was probably found" . . . over at least the forested parts of North Dakota during the breeding season and the months of greatest insect activity"—Soper (1946:135) found: ". . . no records of its occurrence on the Great Plains to the west (of Manitoba), although it doubtless occurs there as a migrant." The general distribution of the Silver-haired Bat in Saskatchewan as shown by Palmer (1954) and Burt and Grossenheider (1952) covers all of the province except the Hudsonian life zone (northern one-quarter of the province).

Forty records of this bat in Saskatchewan during the last four decades are presented in table 1. This includes material from a published report by Banfield (1941) and from several issues of the *Blue Jay*. (Mrs. I. M. Priestly, through constant queries on the subject of bats in the *Blue Jay* from 1942 to 1946, evoked a number of valuable contributions. As a result, Rand (1942) submitted a list of Saskatchewan bats.) Records of specimens in the National Museum of Canada were sent to the Saskatchewan Museum of Natural History by Dr. A. W Cameron. Dr. S. C. Downing forwarded the data from the Roya Ontario Museum and Mr. Harvey Beck submitted a list of specimen in the collections of the University of Saskatchewan. Additional record or specimens were submitted by th others indicated. The 18 specimen received in 1955 and 1956 resulte from public response to our newspaper and radio requests for bats.

The situation in which many o these bats were found (see table 1 shows that this species utilizes man made structures at least as restin places and possibly as breeding site. It might pay to look in similar place earlier in the season, in June an July, for females with young. Th large number of August and September records probably relate t some aspect of the life history o this species, possibly mating o migration. So little is known of the habits that one can only specula on the cause for this apparent increase in appearance. Note th nearly even sex ration (15 female 13 males) and the even month distribution of the specimens (6 f males - 7 males: August; 6 females 4 males: September).

The distribution of the availab records is shown on the accompan ing map. A Manitoba record at T Pas (ROMZP) has been includ to indicate the probable occurrence of this species in that sector of Saskatchewan. The preponderance of records in the Transition lifezone (southern third of the province) may be attributed to the greater number of observers in this region. Nevertheless, it is apparent that the Silver-haired Bat is of frequent occurrence in southern Saskatchewan. It may even be considered to be common: of 31 bats received at the museum in 1955 and 1956, 18 were Silver-haired Bats, four were Red Bats (*Lasiurus borealis*), and nine were Big Brown Bats (*Eptesicus fuscus*).

Owing to the migratory nature of the Silver-haired Bat most of the records are uncertain as regards breeding status. Breeding records in North Dakota in June and July (Bailey, 1926: 212-213) and particularly the presence of females with young in August at Buffalo Narrows (Novakowski, 1954) suggest, however, that many of these records may actually represent breeding localities. Note also the specimens taken in June at Govenlock and in July at Yorkton. These data suggest that the Silver-haired Bat may be a breeding species throughout the Transition and Canadian life zones in suitable areas of Saskatchewan. Further work will obviously be needed to establish the definite breeding range as well as the total area of distribution.

Migration data on bats is exceedingly limited. The present records indicate the presence of Silver-haired Bats in Saskatchewan as early as June 7 and as late as October 12. The October records suggest that some members of this species, although it is regarded as being highly migratory — records far out over the Atlantic being available, may spend the winter here in hibernation. Beer (1956: 282) reported finding a Silver-haired Bat hibernating in a cave in Minnesota in January; he points out that records of this species in hibernation are quite rare.

A number of Silver-haired Bats were kept by me in captivity for several weeks in 1955 and 1956, permitting school-group demonstrations, a TV program and much incidental entertainment. All were fed raw beef liver and fresh banana. Oddly enough, considering their insectivorous habits, they readily ate banana.

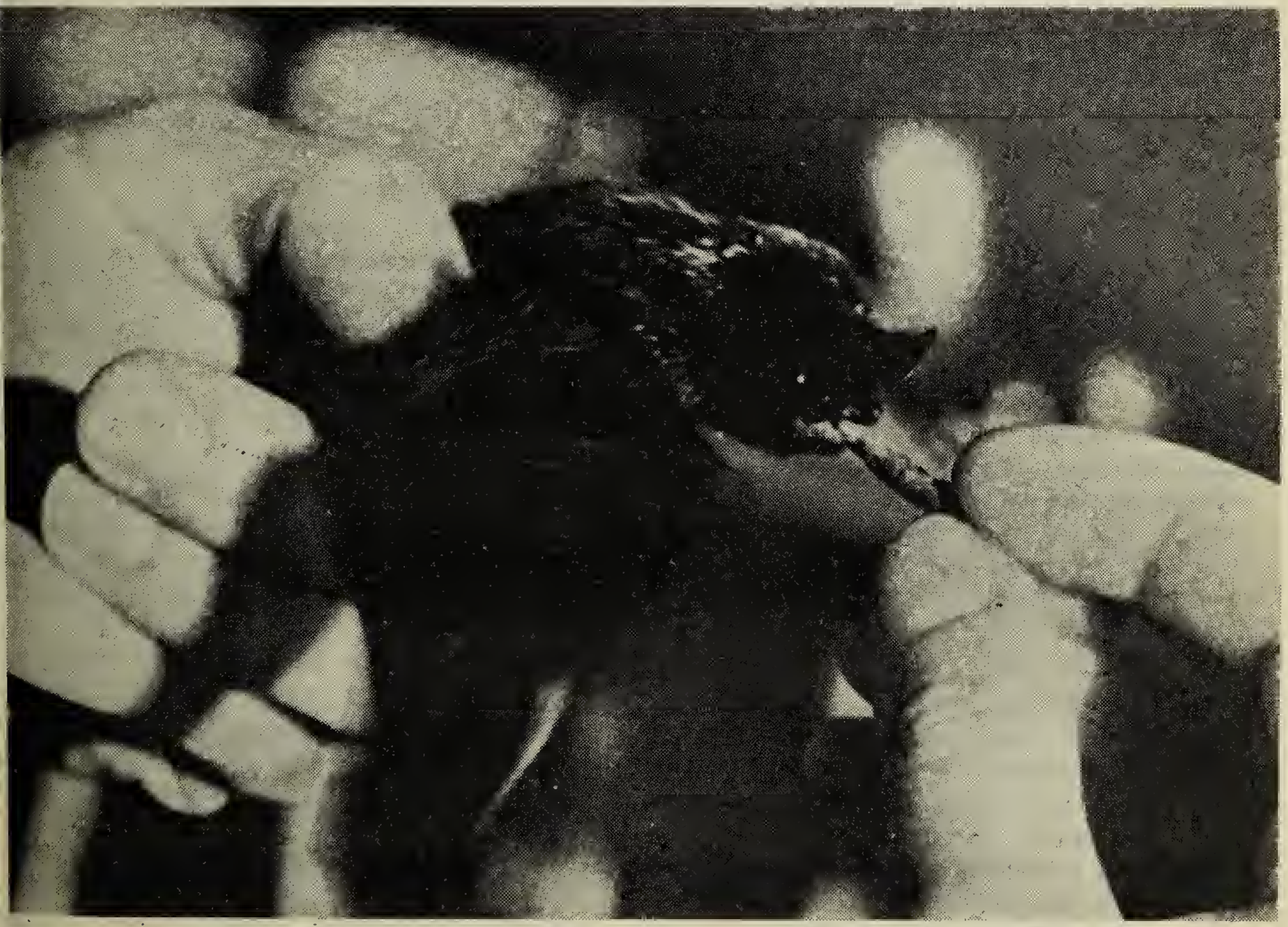


Photo by F. W. Lahrman

Silver-haired Bat feeding, September, 1956

Photo by R. W. Fyfe
Female Silver-haired Bat skin.
Tregarva, Sask., Sept. 10, 1956

(This fruit, along with, of all things, cottage cheese, has long been used as a standard diet for bats in captivity.) The possibility of the closely related and equally insectivorous Red Bat feeding on fruit in the wild has been commented on by Mr. H. H. Pittman of Wauchope, Sask.: "I am not prepared to say that there is any connection, direct or indirect, between Red Bats and wild plums but where these and some of the other fruit bushes occur the bats are often found." (letter to *Blue Jay*, 1946, Vol. 5:5). My bats were usually fed by hand, the bats quickly seizing and rapidly devouring the small bits which were held before their sensitive nostrils. Two of the captive bats, when released in a large room, would repeatedly dip low and skim across the smooth floor, often actually touching the floor with their chin much as if they were attempting to drink. All drank greedily when presented with water while being fed.

Occasionally, when a Silver-haired Bat was disturbed as it rested on a level surface with its wings partly spread, it would, suddenly flip over onto its back, meanwhile baring its teeth and uttering its peculiar "electric spark chittering." This seemingly aggressive or defensive behavior reminded one of a similar behavior often seen in captive owls. In a letter

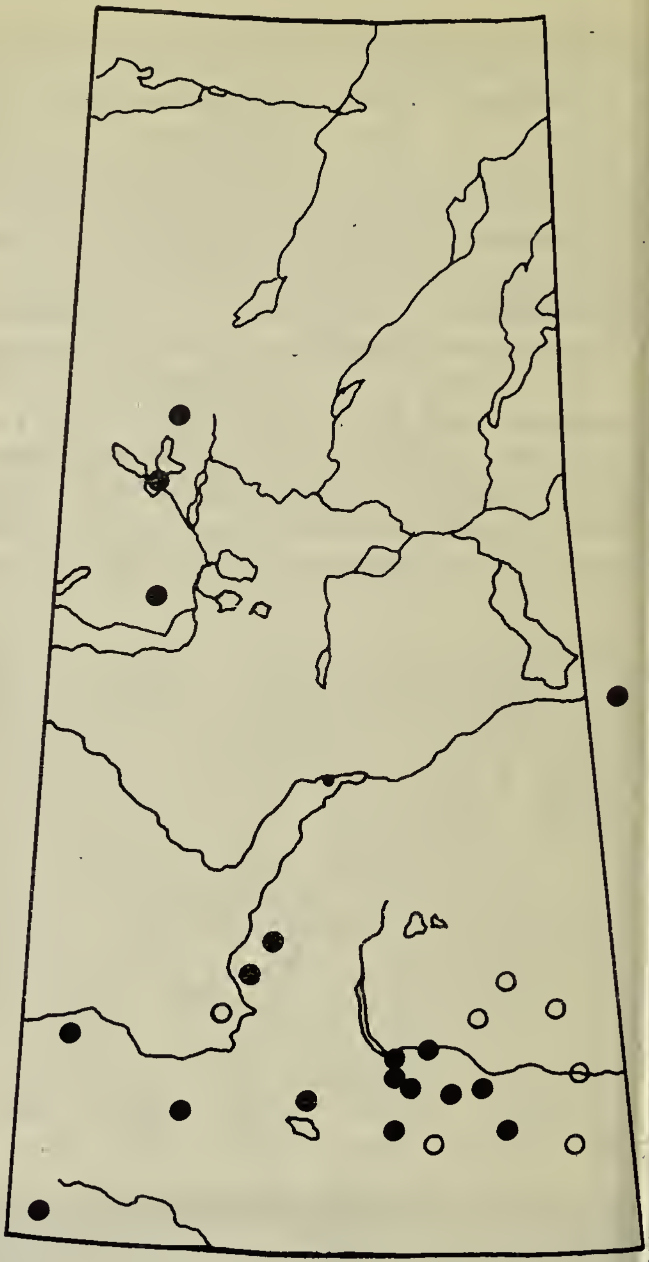


Figure 1. Silver-haired Bat Distribution:
solid circles—specimens
open circles—records

to the *Blue Jay* (1942, 1:32), Mr. I Carvell describes a bat "about s inches long and grey in colo (Hoary Bat (*Lasiurus cinereus*)' which was lying on its back on tl ground and which ". . . when turn over with a stick quickly turn onto its back again."

When more than one bat was ke in the same container (a shoe-bo they invariably clustered togeth one on top of the other. A furth indication of their "sociability" w obtained following the escape of fo bats in the museum library duri the last week of August, 1956. Thr males escaped a day after a fem had escaped and disappeared (pr sumably behind books, etc.). T following evening all four were fou hanging behind a curtain, the th males clustered about the fem This behavior and the condition

(Continued on Page 46)

Saskatchewan Silver-Haired Bat Records

Table 1

ate	Location	Situation	Sex	Specimen (S) or Report (R) by		Collection
ig. 23, '13	Craven	?	F	H. H. Mitchell	S	SMNH
ig. 27, '13	Regina	?	M	H. H. Mitchell	S	SMNH
ig. 18, '31	Regina	?	?	A. Chorolsky	S	ROMZP
ne 7, '33	Govenlock	?	M	H. F. Hughes	S	NMC
ne 7, '33	Govenlock	?	F	H. F. Hughes	S	NMC
ig. 19, '34	Swift Current	On haystack	?	R. Kruse	S	SCCM
ig. 14, 39	Dundurn	Barnyard clearing	?	A. F. Banfield	S	ROMZP
ig. 14, '42	Yorkton	In Elm Tree	?	Mrs. I. M. Priestly	R	....
ig. 15, '44	Indian Head	?	F	Marg Cummings	S	USM
ly 15, '45	Yorkton	In Maple Tree	?	Mrs. I. M. Priestly	R	....
ig. 22, '45	Yorkton	On Street	?	Mrs. I. M. Priestly	R	....
t. 3, '45	Ituna	In Tool Shed	?	H. M. Raynor	R	....
g. 20, '46	Regina	?	M	J. Tell	S	SMNH
pt. 9, '46	Sheho	?	?	W. Niven	R	....
t. 2, '46	Tullis	Pile railway ties	?	Evelyn J. Binnie	R	....
pt. 10, '47	Esterhazy	On window screen	?	Rev. T. Beveridge	R	....
g. 26, '48	Flotten Lake	?	M	S. D. MacDonald	S	NMC
pt., '48	Prelate	Flew inside school	?	Sister Helen	S	In school museum
ne 22, '53	Frobisher Lake	Deserted cabin	F	D. S. Rawson	S	USM
ne 22, '53	Frobisher Lake	Deserted cabin	F	D. S. Rawson	S	USM
g. 7, '53	Buffalo Narrows	Aband. Woodpecker hole	F	N. Novakowski	S	USM
g. 7, '53	Buffalo Narrows	Aband. Woodpecker hole	F	N. Novakowski	S	USM
pt. 1, '55	Regina	On ground	F	A. A. Boney	S	SMNH
pt. 5, '55	Cupar	?	F	Carol Ward	S	SMNH
pt. 11, '55	Regina	In house (?)	F	Local resident	S	SMNH
pt. 11, '55	Outlook	?	M	J. K. McGregor	S	SMNH
pt. 12 '55	Glenavon	?	M	J. V. Florek	S	SMNH
pt. 15, '55	Regina	In granary	M	H. Moravec	S	SMNH
pt. 15, '55	Wilcox	In outshed	M	C. Weisshaar	S	SMNH
pt. 24, '55	Craven	In attic of old house	F	C. Blender	S	SMNH
pt. 29, '55	Mortlach	?	F	E. J. Meadows	S	SMNH
t. 12, '55	Langbank	Inside log building	M	J. L. Cole	R*	....
g. 23, '56	Regina	In house	M	S. Rulach	R*	....
g. 25, '56	Lewvan	In load of railroad ties	M	H. Schwindt	R*	....
g. 28, '56	Regina	In college	M	Father Dolese	R*	....
g. 29, '56	Regina	On outside of building	M	R. W. Nero	R*	....
g. 30, '56	Qu'Appelle	In pool elevator	F	J. E. Hayes	R*	....
g. 31, '56	Regina	In canopy on building	F	R. W. Nero	R*	....
g. 31, '56	Regina	In canopy on building	?	R. W. Nero	R*	....
pt. 10, '56	Tregarva	On barn door track	F	J. W. Busby	S	SMNH

MNH - Saskatchewan Museum of Natural History; NMC - National Museum of Canada; ROMZP - Royal Ontario Museum of Zoology and Paleontology; USM - University of Saskatchewan Museum; SCCM - Swift Current Collegiate Museum; * Examined by R. W. Nero, all except one which escaped were sent alive to Harvard University for recording and analysis of their high-frequency vocalization.

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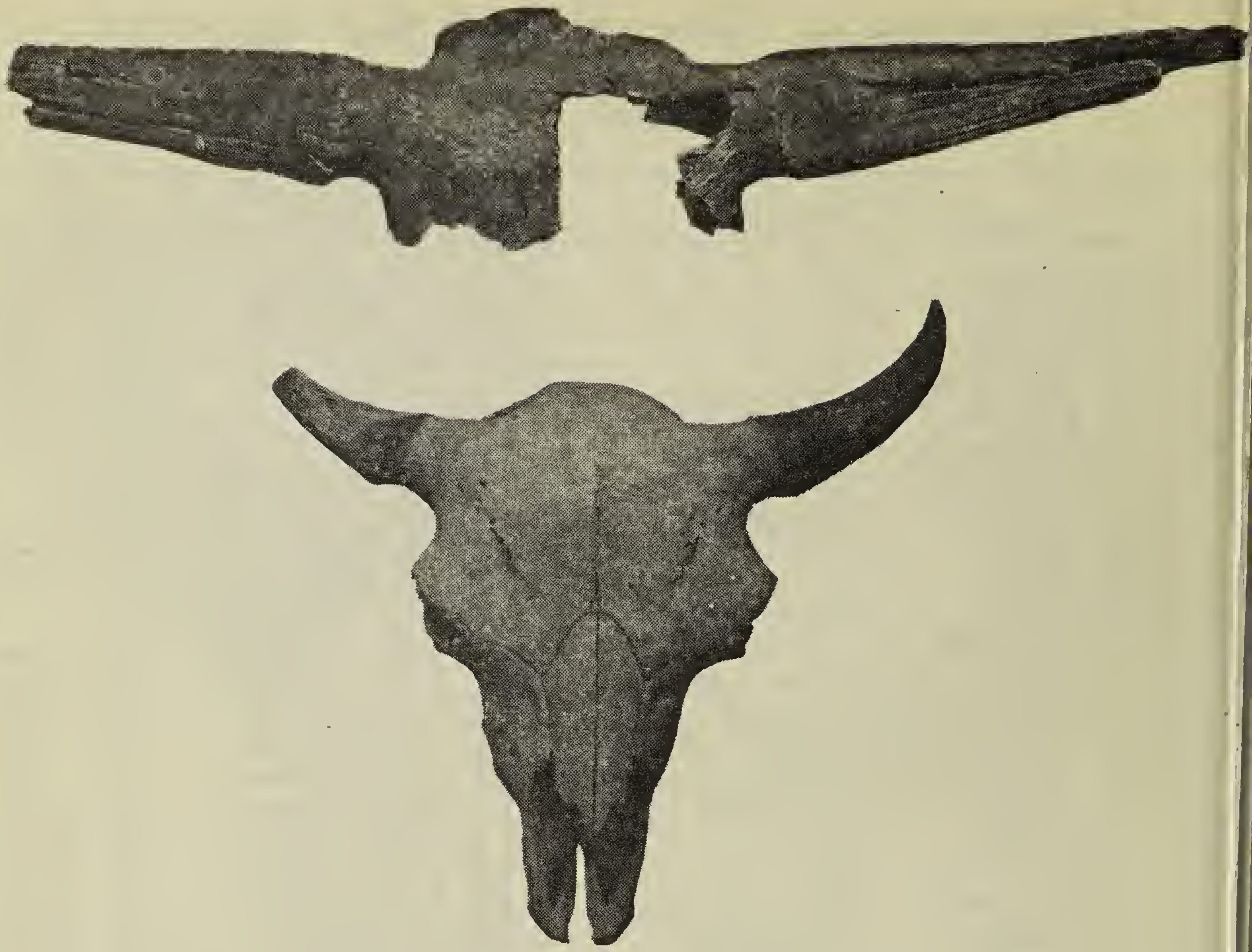


Sask. Govt. Photo Services, D.N.R

Fragment of the skull of an extinct "superbison" (above) and the skull of a large modern bison (below). Note great difference in size.

Giant Bison Found

By BRUCE A. McCORQUODALE
Saskatchewan Museum of Natural History

One of the most outstanding fossil discoveries ever made in Saskatchewan is a portion of the skull of a giant bison known as "superbison." Mr. B. DeVries in co-operation with the Bliss brothers, excavators, recovered this specimen from a gravel pit near Fort Qu'Appelle during gravel removal in August, 1956. The genus "Superbison" is the largest known bison, being much larger than its modern relatives. (See photo.) Although a few others have been found in the Yukon, Alaska and the southern U.S.A. this is believed to be the most southerly and easterly record in Canada.

A complete study of this specimen remains to be made but preliminary judgment indicates that it is probably of interglacial age and at least one hundred thousand years old. This belief is supported by studies of the geological formation and th other fossil animals with which was associated. It is worthy of no that this type of bison probably be came extinct before man came North America; no artifacts hav ever been found in association wi its bones.

The span of the tips of the hor cores if complete would be approx mately five feet; with the horn shel present the span of the horns this great bison would have bee at least six feet. Imagination ca scarcely conceive a bison with hor of such a dimension. The presen of this animal together with a mus ox-like bovid, numerous large nati horses and many elephants (mar moths), as indicated by the fos evidence, presents a picture of strange fauna, indeed, for t southern region of Saskatchewan

Spade and Screen

By FRED ROBINSON, Regina

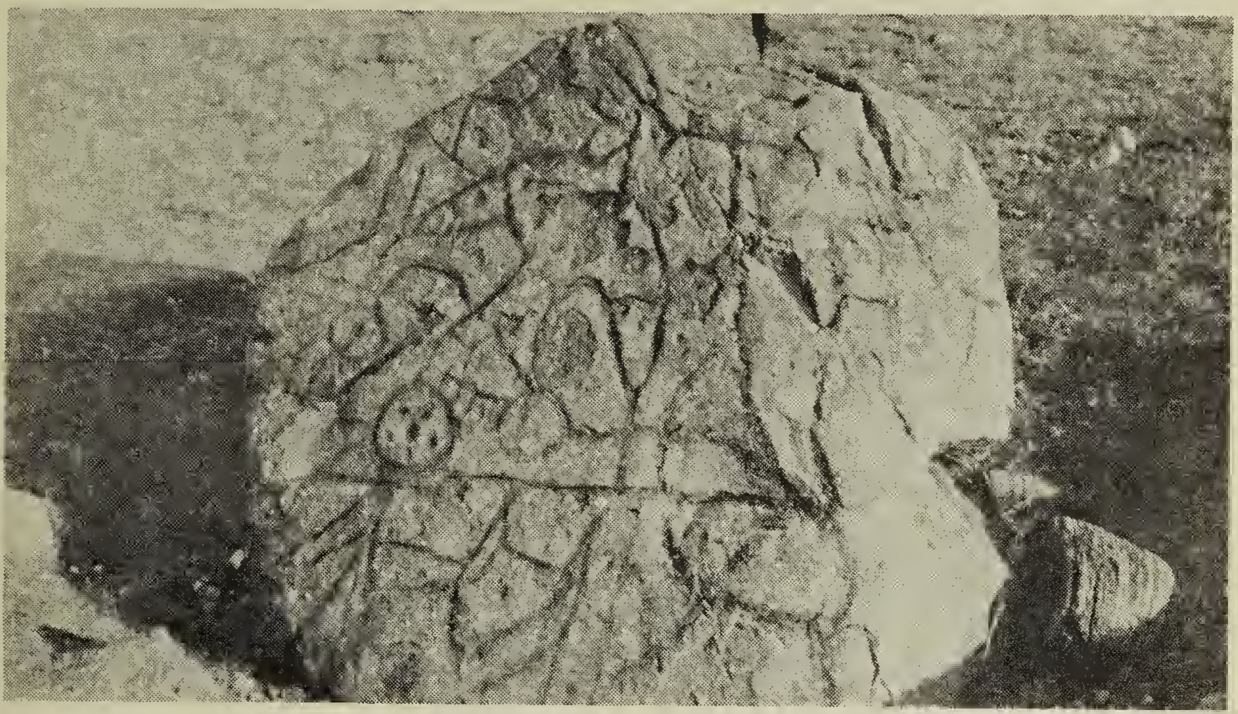


Photo by *E. I. Syverud*

Writing Rock at Alkabo, North Dakota

We Visit the Writing Rock

By J. TURNQUIST, Wallwort

While on our trip to Minnesota st fall we visited the Writing Rock, so named from the Petroglyphs on It is located in the northwest rner of North Dakota, in Divide unty, six miles south and one mile st of Alkabo. It is very desolate untry and surrounded by range nd for miles. The North Dakota istorical Society has taken over 10 res of land for a park and has ilt a small house of stone over e rock so it is difficult to take photo of the rock now with the mmon camera on account of not ving enough light. Fortunately I ve the above snap taken some ars ago.

The rock has a very distinct hunderbird" engraved on it and ary circles with dots in them, also any lines and curves. At the botm there is the outline of an animal hich some think is a horse, but which looks to me more like a lynx. I examined the carvings which appear very much weathered and as if more than one person has done the writing. The rock stands about four feet high. It has been well taken care of and there are no initials of white man on it. I am told that a smaller stone close by with carvings on it was sent to the University at Grand Forks, North Dakota, some years ago. The carvings are all on the north side of the rock. Judging by the size of it, it has been there since the last glacial period. This part of the country must have been good buffalo hunting ground but there is no hint of that animal in the writings.

EDITOR'S NOTE: This type of petroglyph, of which Mr. Turnquist writes, is the rarest of all stone age relics found on the Plains. Less than a dozen of these inscribed rocks have been discovered in Saskatchewan. They are more numerous in the northern States.

Allan J. Hudson

For the fifth story in our series on Canadian Pioneer Archaeologists, we have Mr. Allan J. Hudson, Mortlach, Saskatchewan.

Mr. Hudson, who was born in England in 1890, came to Canada at the age of sixteen. His trip out here was for his health but, once here, he decided to stay to seek his fortune homesteading. Mr. Hudson admits he never did find the fortune but he did find his real interest in life when he moved to Mortlach in 1939. This interest was the active study of archaeology.

As a boy, Mr. Hudson had read considerable literature on early man, owing to the fact that his father, who was a teacher in London, England, was also a keen student of the origin of man. This early interest in archaeology was quickly revived, therefore, when he came to a place where due to drought conditions thousands of artifacts had been found and were still being picked up on the wind-eroded fields around Mortlach.

Mr. Hudson admits that when he first started collecting artifacts, he did so merely as an interesting way of passing the time. His imagination, however, soon became aroused as he began to wonder how the stones were worked, what people or peoples made the tools, how long they had been there, and so on.

Since Mr. Hudson was very familiar with Old World archaeology, he says he tended, at first, to interpret his finds in the European manner. However, as he became more acquainted with the geological history of the region, such explanations became less and less satisfactory. In the first place, he noticed that none of the artifacts or chipped flakes showed any signs of glacial chatter marks, which would indicate that all relic material had accumulated since the last glacier which retreated 10,000 to 15,000 years ago. Also, the attempt to label Canadian artifacts on European lines by similarities of type and shape obviously had the weakness that, on the basis of surface finds, nobody could determine any one cultural assemblage of artifacts. His dream, therefore, was to find some day a buried site where conditions had been depositional and the material sealed in.

This dream of Mr. Hudson's wa realized in 1948 when, through th combined efforts of himself and Joh McLean of Mortlach, the "Besan Site" east of Mortlach was discovered Together the two men explored th valley containing the site and durin the next two years uncovered mos of the present known fire-hearths Consequently, as a result of fairl continuous exploration on a systematic basis both by himself alone an as a member of professional Museu parties, such as the one conducte by Boyd Wettlaufer in 1954, a muc clearer picture of Indian stone cultu was obtained.

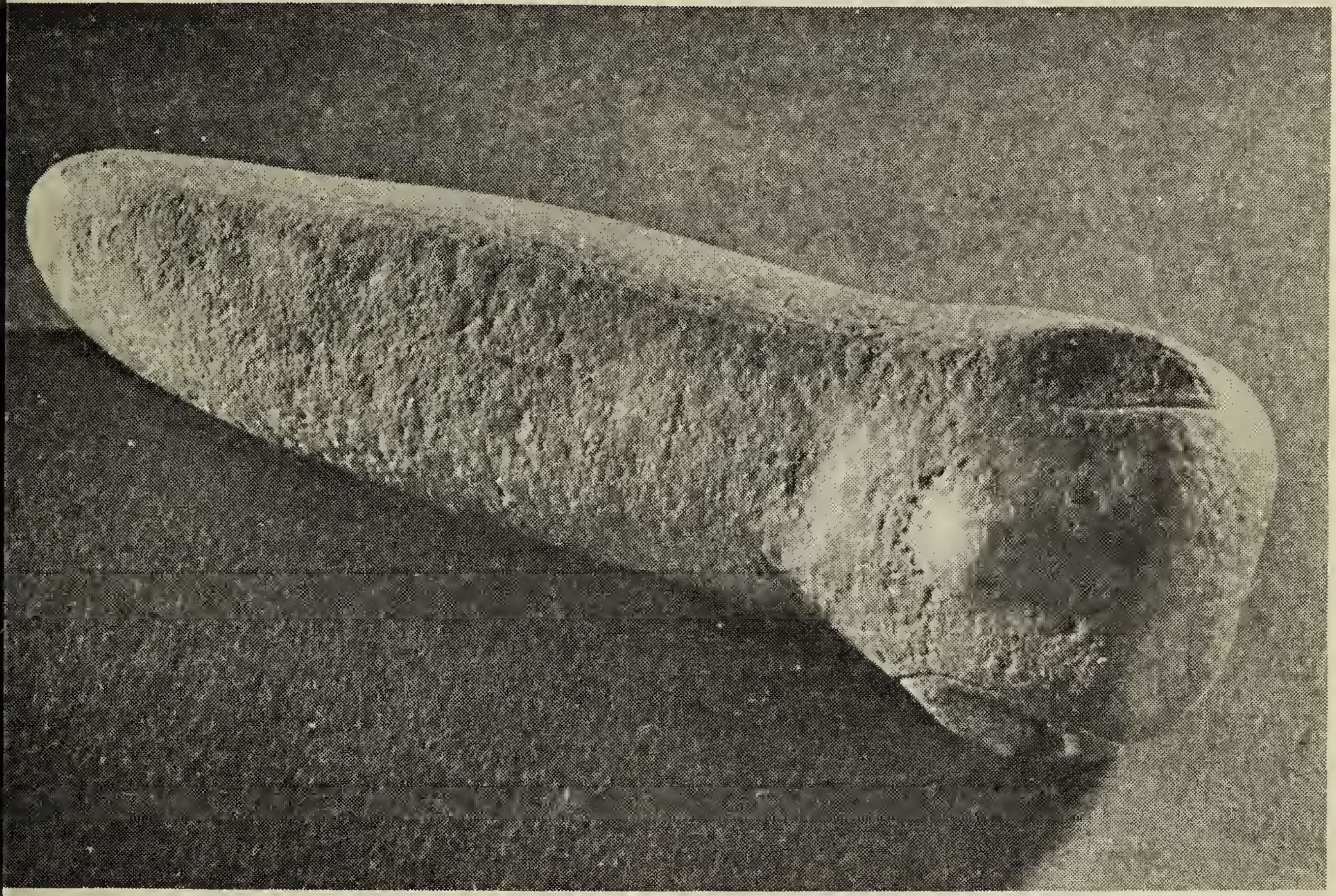
Another activity that fitted in wit Mr. Hudson's archaeological examination of southern Saskatchewan wa his participation in a private surve for an Ottawa botanist, of the glaci channel system of southern Saska chewan from the Cypress Hills the Manitoba border. This gave hi an opportunity to view many priva collections of artifacts and also pick up specimens over a very wi area.

Mr. Hudson says his last remainin ambition is to find an "early-ma site in Saskatchewan that can properly excavated. He also mai tains that the best method of studyi archaeology is by the use of a spa and screen, whereby the whole sto of a prehistoric site can be clear seen in an open cut bank. —F.S.

CONTRIBUTIONS to
SPADE AND SCREEN
may be sent directly to
Fred S. Robinson
2100 York St., Regina

Sculptured Artifact

By BRUCE A. McCORQUODALE,
Saskatchewan Museum of Natural History



Sask. Govt. Photo by O. B. Roberts

The Saskatchewan Museum of
atural History has recently received
unusual sculptured stone artifact
hich was discovered by Lt. H. R.
glis of Regina, Saskatchewan. The
utenant, while exploring a grassy
eadow in the valley of the North
rk of the Frenchman River ap-
oximately twelve miles northwest
Eastend, Saskatchewan, found this
long, cream-coloured stone partial-
exposed among the grass roots.
amination of this stone led him
believe that it had been shaped
humans; being highly appreciative
the possible scientific value of
ch artifacts, Lt. Inglis passed it
to the care of the museum upon
s return.

This specimen is a pestle-shaped,
ulptured limestone artifact (see
oto). One end has been roughly
ulptured into the shape of a human
ad which converges below the
outh to meet the longer shaft or
eck" which then tapers rather
adually to terminate in a blunt end.
is 223 mm. long (8¾ inches) and
mm. in diameter at the midsection
¼ inches).

The most prominent feature of the head are the nose and ears. The ears are represented by large crescent-shaped ridges located slightly forward of the lateral mid-line. The nose consists of a rounded, vertically-oblong elevation. The eyes are small circular pits spaced rather closely together; a curved line of nine small pits under the nose represents the mouth. The top of the head is nearly flat, suggesting the use of this artifact as a pestle; the absence of marks of abrasion or percussion, however, denies this suggestion. Two shallow parallel grooves around the forward quarter of the perimeter of the top of the head may represent wrinkles of the forehead. From the upper end of each ear a concentric groove passes in front of the ear and curves below the ear to terminate approximately at the lateral mid line. Also under each ear and located close to the base of the head may be seen two transverse parallel grooves, each approximately 10 mm. (⅜ inch) in length.

The neck of this artifact displays fewer prominent features. In transverse cross-section it is nearly circular in outline except for a marked flattening on the facial side. This flattened side is marked by a medially located groove 60 mm. (2⅜ inches) in length which is terminated at the head-end by an obscure transverse line 10 mm. (⅜ inch) in length. On the posterior side near the base of the head an elliptical shape, 15 mm. (⅝ inch) in width and 35 mm. (1⅜ inches) in length has been inscribed. The longitudinal axis of the ellipse lies at right angles to the axis of the neck.

The material of which this artifact is composed is a cream-grey limestone with a distinct foliation disclosed by minute parallel ridges on the sides of the neck. The greater part of the surface is covered with small percussion pits. This reveals that the specimen was partly shaped by "pecking."

The question that everyone is inclined to ask at this point is, "Well, what is it?" The answer to the question seems to be that we may never know with certainty what it was used for. We can guess of course. Perhaps it represents an Indian god and was revered as a personal token of his existence. It may have been a sacred object in a medicine bundle. One might also guess that it was a ceremonial pemmican-pestle at religious rites. Perhaps we shall never ascertain its true function, but in the meantime it is a pleasant diversion to contemplate what this artifact may have meant to a primitive and obscure race of the past. One thing is clear—its creator possessed a considerable artistic ability. The head of a man is skillfully rendered in a sophisticated and subtle form.

Further knowledge of this artifact may yet be obtained through careful excavation of prehistoric sites or even through surface collecting. The gradual accumulation of series of specimens frequently results in a greater understanding of their form and function. Eventually, it may be possible to relate this artifact to a specific culture and time period. To this end it is requested that persons with similar artifacts in their collections correspond with the museum.

Sask. Silver-Haired Bat Records

(Continued from Page 40)

the female strongly suggested mating activities. (Bats normally mate in the fall, the sperm surviving in the female until spring, when the ovum is fertilized.) Palmer states that the Silver-haired Bat breeds in "early fall" (1954:66), but little is really known of its habits.

Further knowledge of the distribution and natural history of th Silver-haired Bat and other specie will largely depend upon the contribution of specimens and observation from interested persons throughou the province. Actual specimen ought to be collected wherever possible because of the possibility o misidentification of most species a well as the value of a series o skins. The desirability of placin specimens in museum collections obvious. Here real records of ou fauna are collectively and readil available to students as well as bein permanently safeguarded.

COVER PICTURES

The two cover pictures of Blue Jays form part of a series sent us by Mr. and Mrs. L. Keresztes of New York (see BLUE JAY, Vol. XIV, page 21). The Keresztes knew that we would be especially interested in these pictures of the bird that gave our magazine its name. Since the magazine's name was chosen by Isabel M. Priestly, we find it particularly appropriate that the Blue Jay was actually the last bird mentioned in her field notes. Dr. S. Houston, who has been checking through Mrs. Priestly's notebook recently, sends us her last entry: "April 8, 1946. Lovely morning. Walked out along the tracks to pond on west road. Meadowlarks singing, juncos everywhere, blue jays around fir trees. Ponds frozen over. No ducks or red-wings, just one brewer's. On way home heard blue jay singing."

Astronomy and the I.G.Y.

By JOHN HODGES, Regina

We have been hearing announceents regarding a combined operation scientists all over the world in a ıdy of the Earth. This extensive ogramme of research is called the ternational Geophysical Year and ll begin July 1, 1957. Actually, the ear" will be 18 months long, allow- time for observing phenomena ich may occur over a period of ne greater than 12 months, and so allowing for overlapping of obrvations from various parts of the rld. Soon we shall be referring this programme as the I.G.Y. as become more familiar through rld-wide publicity with its dramic projects and their results.

This is not the first operation in hich scientists from many countries ve co-operated to gather data and arn more about a particular subject. ıt it will be the greatest. During is operation, scientists hope to unvel some of the mysteries about e earth, such as its magnetism, its ue size and shape. The phenomenon aurora in our upper atmosphere ill come under close scrutiny. Since e source of these displays probably s deep in the Sun, in learning out aurora we may learn more out our nearest star, the Sun.

Man occupies very little of the atospheric envelope, his usual level of cupation being from the surface the earth to the top of the Empire ate Building. A few go deep in ines, or fly fairly high in the lower gions of the atmosphere, but no ne knows just what the conditions e "high up". To gain data, rockets ill be sent up to gather samples and dio temperatures, etc. back to earth.

Canada will play a very important rt in I.G.Y. The University of Saskatchewan will be a centre for aurora studies. The base for some of the rocket launching will be Churchill. Meteor data will be gathered, both by visual methods and by radar, through the National Research Council, Upper Atmosphere Division, Ottawa.

One of the most dramatic events to occur during the I.G.Y. will be the launching of satellites. Man has undertaken to put a sphere 30 inches in diameter, packed with instruments weighing approximately 21.5 pounds, 300 miles above the earth's surface and to keep it there by imparting to it a speed of 17,053 miles an hour in a course parallel to the earth's surface.

The first of these satellites and perhaps the second wll not be visible at Regina's latitude. However, with binoculars you may get a good look at number three, and even without glasses, a few peeks at sunrise or sunset. If you are not fortunate enough to see it the first time, bear in mind that it will rise and set 15 times during 24 hours if it returns over your locality.

Perhaps one of the first benefits of this project to you and me will be what is learned about forecasting weather. We should also like to know whether the earth is warming up, and if so, how fast. These studies will require men to go to the coldest regions of the earth, and many expeditions are already in position. We hope for much from the International Geophysical Year, for we are living in an age that promises to reveal more about the universe we live in than any past age has done. The really interesting point at this time is that more than 40 countries have enlisted the ability of over 5,000 scientists in a co-operative effort to help man take his first step into space.

Contributions to this page or enquiries about astronomy may be sent to **John Hodges, 1554 Elphinstone St., Regina.**

The Blue Jay Bookshelf

TRAVELS and TRADITIONS OF WATERFOWL

By H. Albert Hochbaum

The University of Minnesota Press, Minn., 1955
301 pp. 26 figs. 2 tables and numerous pen and ink sketches by the author, $5.00

Reviewed by Richard W. Fyfe,
Saskatchewan Museum of Natural History

Mr. A. Hochbaum, director of the Delta Waterfowl Research Station, has written a stimulating book on bird behaviour patterns for the layman and scientist alike. Many of the observations are directly related to the author's personal experience in Delta and the reader readily becomes a part of these experiences. The book is divided into three parts dealing with waterfowl travel, migration and traditions.

Initially Mr. Hochbaum deals with local movements about the marsh and countryside with particular attention to flight behaviour and the factors influencing this behavior. Included are such things as flight relationships and orientation to the wind, shore patterns, and landmarks. Flight trends and behavior about the marsh and local areas are of particular interest because they take the naturalist and sportsman into the marsh, showing relationships and giving meaning to observations familiar to many.

The mysteries of migration are dealt with very convincingly. Hochbaum first eliminates many of the myths of migration in order to approach the problem with a scientific mind. The author''s observations are very sound, summarizing and utilizing most of the literature on waterfowl migration. He points out the significance of weather and homing tendencies, and uses as illustration experiments of exceptional interest. Also he shows the value of all scientific research to our knowledge and the practical application of research. Above all, the importance of accurate observation and records is well illustrated.

Perhaps the author has over generalized specific studies on waterfowl, as the actions of one species are not always characteristic of another. However, such generalization should stimulate further inquiry an study by both the scientist and th layman.

Travels and Traditions of Waterfowl, because of its general interes and excellent text illustrations, is "must" to all who have watched and questioned bird migration—naturalists, sportsmen and scientists.

WILD PLANTS OF THE CANADIAN PRAIRIES

Watch for Arch C. Budd's revise flora of the Canadian prairies whic is to be published soon. The title wi be **"Wild Plants of the Canadia Prairies,"** Publication No. 983, pric $1.50, post free from the Informatio Service, Department of Agricultur Ottawa.

BIRDS OF THE CYPRESS HILLS AND FLOTTEN LAKE REGIONS SASKATCHEWAN

By W. Earl Godfrey

Bulletin No. 120, National Museum of Cana
Ottawa, 1950. 96 pp. 25 cents.

Anyone planning to attend t summer meeting of the Saskatchew Natural Society in June should se for a ccpy of this bulletin. In a dition to its systematic list of bir the bulletin has a useful introducti to the physical features, vegetati and bird habitats of the Cypress Hi region where the meeting will held. The two lists of birds, for t Cypress Hills and the Flotten La regions, result from studies made a National Museum field party in t summer of 1948. Previous recor for the two areas have been add to those of the Museum party.

A BOTANICAL SURVEY OF THE CYPRESS HILLS

By August J. Breitung

(*Can. Field-Naturalist*, Vol. 68, April-June, '

Is recommended as a compan study to the above bulletin for th interested in the flora of the Cypr Hills. This article was reviewed L. T. Carmichael in the Blue J Vol. XIII, Jan.-Feb.-Mar., 1955. prints available from the Canad Field-Naturalist, Ottawa.

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iety can only afford to print a limited number of pages. There are several
rses of action we can take to remedy this. The best one seems to be for
regular members to renew promptly and to get new members to join.
mpt renewal saves us money because we do not have to print reminders
mail them. New members are always welcome and necessary. The more
members we get the bigger our circulation. A larger circulation reduces
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vince in Canada, to most of the states in the United States, to South
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tinue to expand. So renew your membership and get that new member, too.

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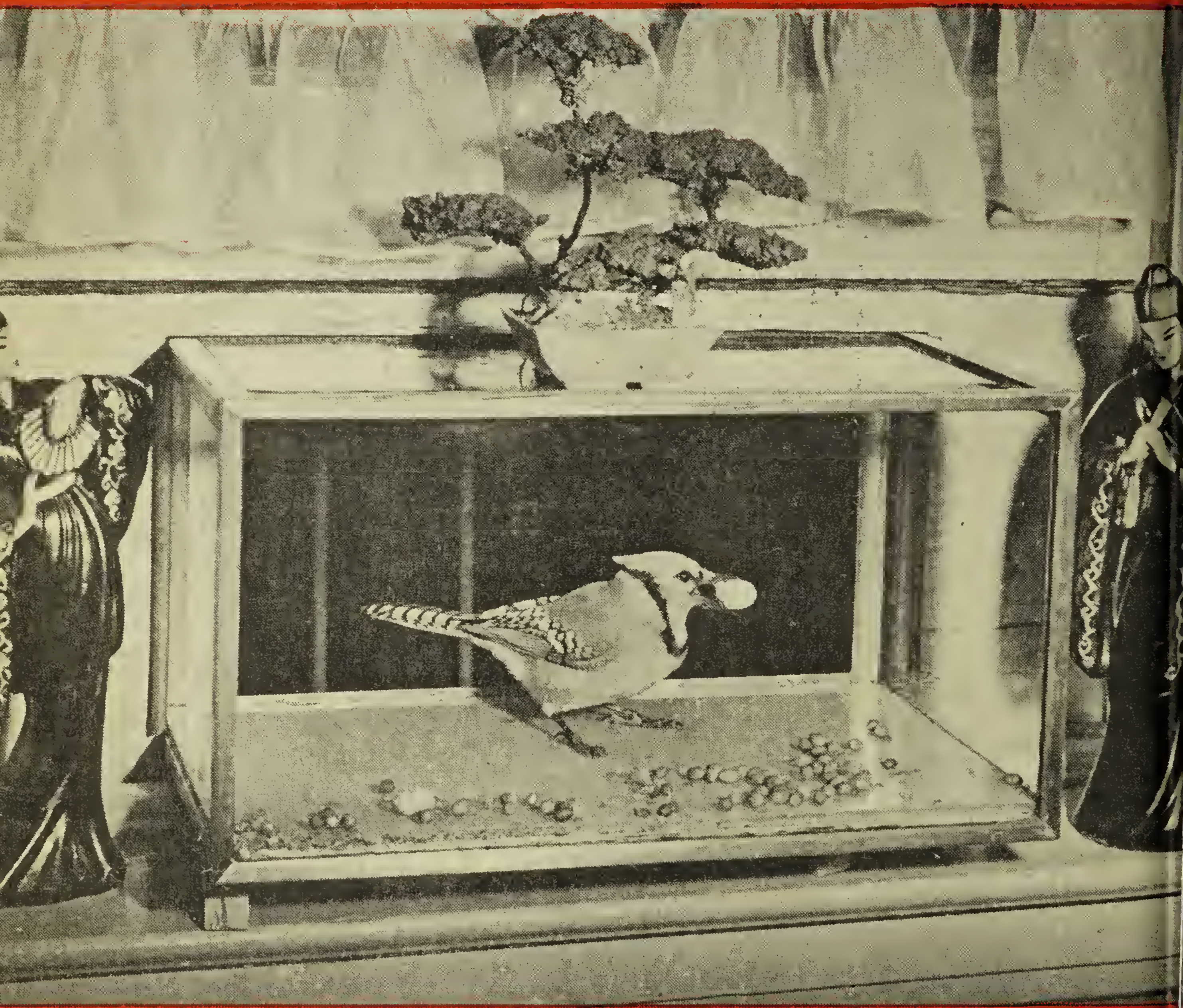

— *Photo by L. and J. Kereszte*

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